

## ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO

selezione pubblica per n.\_1\_ posto/i di Ricercatore a tempo determinato in tenure track (RTT), riservata ai sensi dell'art.14 comma 6-septiesdecies del decreto legge 30 aprile 2022, n. 36 convertito con modificazioni, dalla Legge 29 giugno 2022, n. 79

per il settore concorsuale \_\_\_\_\_ 02/A1 - Fisica Sperimentale delle Interazioni Fondamentali \_\_\_\_\_ , settore scientifico-disciplinare \_\_\_\_\_ FIS/04 - Fisica Nucleare e Subnucleare \_\_\_\_\_ presso il Dipartimento di \_\_\_\_\_ FISICA "ALDO PONTREMOLI" \_\_\_\_\_ , (avviso bando pubblicato sulla G.U. n. \_\_81\_\_ del \_\_24/10/2023\_\_) Codice concorso \_\_5414\_\_

## [Simone Bottoni] CURRICULUM VITAE

### INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

|                 |            |
|-----------------|------------|
| COGNOME         | BOTTONI    |
| NOME            | SIMONE     |
| DATA DI NASCITA | 30/09/1986 |

Il curriculum, composto da 27 pagine, è riportato a partire dalla pagina seguente.

Data

23/11/2023

Luogo

Milano

# Simone Bottoni

---

*curriculum vitae*  
November 2023

## Personal information

**Name** Simone Bottoni  
**Birth** Milano, 30/09/1986  
**Position** Researcher in nuclear physics (RTDA - sc: 02/A1 - ssd: FIS/04)  
**Jul. 2021 -**

## Education and scientific career

**Feb. 2021** Postdoctoral fellow in nuclear physics (type A) at Università degli Studi di Milano (I).  
**Mar. 2017**

**Feb. 2017** Employee at CAEN S.p.A. (I) based at Institut Laue-Langevin (F).

**Dec. 2016** Postdoctoral fellow in nuclear physics at Argonne National Laboratory (U.S.A.).  
**Apr. 2015**

**Oct. 2014** PhD student in physics at Università degli Studi di Milano (I) and KU Leuven (B).  
**Nov. 2011**

**2009-2011** Master student in physics at Università degli Studi di Milano (I).  
**2005-2009** Bachelor student in physics at Università degli Studi di Milano (I).

## Degrees

**Joint PhD** Joint PhD degree in physics at Università degli Studi di Milano (I) and KU Leuven (B)  
**26 Jan. 2015** **Thesis:** Cluster-transfer reactions with radioactive beams: a spectroscopic tool for neutron-rich nuclei.  
**Advisors:** Prof. S. Leoni, Prof. R. Raabe (KU Leuven), Prof. A. Bracco

**Master** Master degree in physics at Università degli Studi di Milano (I) - 110/110 cum laude  
**2011** **Thesis:** Reaction dynamics and gamma spectroscopy studies of Ne isotopes by the heavy ion reactions  $^{22}\text{Ne}$  on  $^{208}\text{Pb}$  at 130 and 152 MeV.  
**Advisors:** Prof. S. Leoni, Prof. A. Bracco, Dott. G. Benzoni

**Bachelor** Bachelor degree in physics at Università degli Studi di Milano (I) - 104/110  
**2009** **Thesis:** Spettroscopia gamma discreta in nuclei esotici ricchi di neutroni con  $A \approx 50$ .  
**Advisors:** Prof. S. Leoni, Prof. A. Bracco

**High school** High school diploma at Liceo Scientifico Statale Vittorio Veneto, Milano (I) - 98/100  
**2005**

## — Main research areas

- Experimental nuclear physics.
- Investigation of nuclear structure far from stability.
- Particle and  $\gamma$ -ray spectroscopy with complex instrumentation based on segmented detection arrays (semiconductors and scintillators, including large arrays such as AGATA).
- Monte Carlo simulations for optimization of experimental setups (in particular for the AGATA array).
- Nuclear reaction calculations for experiment planning and data interpretation.

## — Bibliometry

**Publications** 128

**Citations** 1287

**h-index** 22

Among the publications:

Nature: **3**

Phys. Rev. Lett: **8**

Phys. Lett. B: **11**

Phys. Rev. C: **40**

Eur. Phys. J. A: **4**

Nucl. Inst. Meth. A: **4**

Eur. Phys. Lett.: **1**

Phys. Scripta: **2**

Eur. Phys. J. Plus **1**

Journ. Instr.: **1**

## — Abilitazione Scientifica Nazionale (ASN)

**April 2021** 02/A1 - experimental physics of fundamental interactions (II fascia - associate professor)

## — Working groups and responsibilities

- 2023 - pres.** Member of the "Commissione Orario" of the Physics Department of Università degli Studi di Milano.
- 2022 - pres.** Responsible of the Nuclear Physics Group website of the Physics Department of Università degli Studi di Milano.
- 2022 - pres.** Elected chairperson of the User Board of Laboratori Nazionali di Legnaro (INFN).
- 2022 - 2023** Convener of the working group "Light and Medium Mass Exotic Nuclei" for the Nuclear Physics Mid Term Plan in Italy of Laboratori Nazionali di Legnaro (INFN).
- 2020 - pres.** Member of the management board of the GRIT project.
- 2020 - pres.** Group leader of the working group for physics simulations of the GRIT project, a new type of compact, high granularity Silicon array for the detection of charged particles produced in nuclear reactions.
- 2019 - pres.** Member of the AGATA@LNL working group for performances, simulations and commissioning of the AGATA HPGe  $\gamma$  array at Laboratori Nazionali di Legnaro (INFN).
- 2018 - 2021** Elected delegate of postdoctoral researches of the Physics Department of Università degli Studi di Milano.

---

## Grants

Total number of grants: **3**

- October 2023** Local responsible of the PRIN 2022 - PE2 project of the Italian Ministry of University and Research (MUR)  
**Title:** Novel vertex reconstruction and Pulse-Shape Analysis for Investigating Rare Exotic Nuclei  
**Status:** approved  
**Funding:** 198 k€  
**Duration:** 2 years
- July 2023** P.I. of the PSR - LINEA 2 project of Università degli Studi di Milano  
**Title:** Development and implementation of detectors for charged particle- and neutron-spectroscopy studies with transfer reactions  
**Status:** approved  
**Funding:** 24 k€  
**Duration:** 2 years
- February 2022** P.I. of the PSR - LINEA 2 project of Università degli Studi di Milano  
**Title:** Exploring nuclear lifetimes with the Advanced GAMMA Tracking Array  
**Status:** approved  
**Funding:** 10 k€  
**Duration:** 2 years

---

## Leaderships in experimental projects

Total number of proposals: **14**

- November 2023** Spokesperson for beam time request  
**Subject:** Search for shape coexistence in  $^{80}\text{Zn}$  via (t,p) reactions  
**Laboratory:** ISOLDE-CERN, Geneva (CH)  
**Setup:** Isolde Solenoid Spectrometer  
**Status:** submitted
- December 2022** Spokesperson for beam time request  
**Subject:** Nuclear structure studies in the vicinity of Z=28 neutron-rich isotopes with AGATA and PRISMA  
**Laboratory:** LNL, Legnaro (I)  
**Setup:** AGATA-PRISMA  
**Status:** approved
- December 2022** Spokesperson for beam time request  
**Subject:** Spectroscopy and lifetime measurements toward the Island of Inversion at N=20  
**Laboratory:** LNL, Legnaro (I)  
**Setup:** AGATA-PRISMA  
**Status:** approved and run - analysis under my responsibility
- December 2022** Spokesperson for beam time request  
**Subject:** Probing nuclear rotation in the continuum of  $^{11}\text{Be}$  through  $^{10}\text{Be}(d,p)$  reactions  
**Laboratory:** GANIL, Caen (F)  
**Setup:** MUGAST-EXOGAM  
**Status:** not approved

- September 2022** Spokesperson for beam time request  
**Subject:** Odd isomeric ratios in odd Pt isotopes  
**Laboratory:** ILL, Grenoble (F)  
**Setup:** FIPPS  
**Status:** approved and run - analysis under my responsibility
- September 2021** Spokesperson for beam time request  
**Subject:** Probing the rapid shape transition in  $^{100}\text{Zr}$  and  $^{102}\text{Zr}$  by fast-timing lifetime measurements  
**Laboratory:** ALTO, Orsay (F)  
**Setup:**  $\nu\text{Ball2}$   
**Status:** approved and run - analysis under my responsibility
- September 2020** Spokesperson for beam time request  
**Subject:** Complete low-spin spectroscopy of  $^{83}\text{Se}$  as a benchmark for large scale shell model calculations  
**Laboratory:** ILL, Grenoble (F)  
**Setup:** FIPPS  
**Status:** approved and run - analysis under my responsibility
- September 2018** Spokesperson for beam time request  
**Subject:** Characterization of enriched  $^6\text{LiF}$  and  $^7\text{LiF}$  targets  
**Laboratory:** MLZ, Munich (D)  
**Setup:** Silicon detectors  
**Status:** approved and fully analysed
- September 2018** Spokesperson for beam time request  
**Subject:** Investigating hole-core coupled states in  $^{131}\text{Sn}$  by lifetime measurements  
**Laboratory:** ILL, Grenoble (F)  
**Setup:** Lohengrin and LaBr detectors  
**Status:** approved and published
- February 2018** Spokesperson for beam time request  
**Subject:** Study of superdeformed structures and shape coexistence in  $^{42}\text{Ca}$  by  $(n,\gamma)$  reactions on a radioactive  $^{41}\text{Ca}$  target  
**Laboratory:** ILL, Grenoble (F)  
**Setup:** FIPPS  
**Status:** approved and run - analysis under my responsibility
- February 2018** Spokesperson for beam time request  
**Subject:** Precision measurement of M1 transition strengths in  $^{133}\text{Sb}$   
**Laboratory:** ILL, Grenoble (F)  
**Setup:** Lohengrin and LaBr detectors  
**Status:** approved and fully analysed
- October 2017** Spokesperson for beam time request  
**Subject:** Understanding collectivity and shape transitions in Zn isotopes across  $N=40$  by measuring  $\gamma$ -ray decays and lifetimes of low-lying off-yrast states in  $^{72}\text{Zn}_{42}$   
**Laboratory:** IFIN-HH, Bucharest (RO)  
**Setup:** ROSPHERE  
**Status:** approved and fully analysed
- February 2017** Spokesperson for beam time request  
**Subject:** Search for quasi-particle-phonon coupled states in mid-shell Ca isotopes  
**Laboratory:** ILL, Grenoble (F)  
**Setup:** FIPPS  
**Status:** approved and run - analysis under my responsibility

**September** Spokesperson for beam time request  
**2016** **Subject:** Microscopic origin of Quantum Phase Transitions in the shape of neutron-rich nuclei in the  $A \sim 100$  region  
**Laboratory:** Argonne National Laboratory, Argonne (U.S.A.)  
**Setup:** GAMMASPHERE/GRETINA-ORRUBA  
**Status:** approved

Total number of Letters of Intent: (projects in preparation) **5**

**April** Spokesperson of the Letter of Intent for SPES  
**2023** **Subject:** Nuclear structure studies around  $^{132}\text{Sn}$  with a tritium target  
**Laboratory:** LNL, Legnaro (I)

**December** Spokesperson of the Letter of Intent for AGATA  
**2022** **Subject:** Performance of AGATA at higher energies  
**Laboratory:** LNL, Legnaro (I)

**July** Spokesperson of the Letter of Intent for ISS  
**2020** **Subject:** Digging out protons to unearth their impact on the structure of neutron-rich nuclei by  $(t, \alpha)$  reactions in inverse kinematics  
**Laboratory:** ISOLDE - CERN, Geneva (CH)

**March** Spokesperson of the Letter of Intent for AGATA  
**2018** **Subject:** Large- and positive-Q-value proton-transfer reactions with radioactive targets for nuclear structure studies  
**Laboratory:** LNL, Legnaro, Padova (I)

**March** Spokesperson of the Letter of Intent for AGATA  
**2018** **Subject:** Investigating the role of the proton  $g_{9/2}$  orbital in the structure of  $^{69}\text{Cu}$   
**Laboratory:** LNL, Legnaro, Padova (I)

---

## Invited talks

Total number of invited talks: **10**

**November** **Subject:** The GRIT physics program at LNL  
**2023** **Workshop:** GRIT workshop  
**Location:** Gif-Sur-Yvette (F)

**November** **Subject:**  $^7\text{Li}$   $\gamma$  decay in the continuum  
**2022** **Workshop:** Joint LIA COLL-AGAIN, COPIGAL, and POLITA workshop  
**Location:** IJClab, Orsay (F)

**April** **Subject:** Light and medium-mass exotic nuclei  
**2022** **Workshop:** Nuclear Physics Mid Term Plan in Italy of Laboratori Nazionali di Legnaro  
**Location:** Legnaro, Padova (I)

**March** **Subject:** Structure of Ca isotopes between doubly closed shells  
**2021** **Seminar:** University of Warsaw  
**Location:** On line

**September** **Subject:** Structure of Ca isotopes between doubly closed shells  
**2020** **Conference:** Congresso Nazionale della Società Italiana di Fisica - SIF20  
**Location:** On line

**September** **Subject:** Hybridization phenomena in odd-mass neutron-rich nuclei  
**2019** **Conference:** XXVI nuclear physics workshop  
**Location:** Kazimierz Dolny (PL)

- October 2017** **Subject:** Valence particle/hole – core excitations couplings: new experimental investigations and novel theoretical approaches  
**Conference:** Selected Topics in Nuclear and Atomic Physics 2017  
**Location:** Fiera di Primiero (I)
- June 2017** **Subject:** Nuclear structure studies with heavy-ion reactions and GRETINA  
**Conference:** Gordon Research Conference on Nuclear Chemistry  
**Location:** New London (U.S.A)
- December 2016** **Subject:** Angular distributions of tracked gamma-rays produced in direct reactions between heavy ions  
**Workshop:** First AGATA-GRETINA tracking arrays collaboration meeting  
**Location:** Argonne National Laboratory (USA)
- January 2016** **Subject:** Nuclear structure studies around N=40 with heavy-ion transfer reactions  
**Seminar:** Heavy-ion discussions  
**Location:** Argonne National Laboratory (USA)

## Contributed talks

Total number of contributed talks: **29**

- September 2023** **Subject:** Search for the  $\gamma$  decay of the narrow near-threshold proton resonance in  $^{11}\text{B}$   
**Conference:** Congresso Nazionale della Società Italiana di Fisica - SIF23  
**Location:** Salerno (I)
- September 2023** **Subject:** Search for the  $\gamma$  decay of the narrow near-threshold proton resonance in  $^{11}\text{B}$   
**Conference:** XXXVII Mazurian Lakes Conference on Physics  
**Location:** Piaski (PL)
- June 2023** **Subject:** Lifetime measurements in exotic nuclei at LOHENGRIN  
**Conference:** 17<sup>th</sup> International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics (CGS17)  
**Location:** Grenoble (F)
- September 2022** **Subject:** Lifetime measurements in  $^{131}\text{Sb}$  at LOHENGRIN  
**Conference:** International Nuclear Physics Conference (INPC 2022)  
**Location:** Cape Town (SA)
- May 2022** **Subject:** Persistence of the weak-coupling limit around  $^{132}\text{Sn}$ : the case of the 1p-2h  $^{131}\text{Sb}$  nucleus  
**Conference:** 13<sup>th</sup> International Spring Seminar on Nuclear Physics  
**Location:** Ischia (I)
- July 2019** **Subject:** Exploring the structure of odd-mass isotopes around the  $^{132}\text{Sn}$  exotic, doubly-magic nucleus  
**Conference:** International Nuclear Physics Conference (INPC 2019)  
**Location:** Glasgow (UK)
- April 2019** **Subject:** Search for quasiparticle states in  $^{45}\text{Ca}$   
**Workshop:** IFIN-HH-ILL workshop  
**Location:** Bucharest (RO)
- September 2018** **Subject:** Valence particle/hole core couplings in neutron-rich, exotic nuclei  
**Conference:** Nucleus Nucleus Collision 2018  
**Location:** Tokyo (J)

- August 2018** **Subject:** Valence particle/hole core couplings in neutron-rich, exotic nuclei  
**Conference:** LIII Zakopane conference on nuclear physics  
**Location:** Zakopane (PL)
- February 2018** **Subject:** Spectroscopy of valence particle nuclei around  $^{48}\text{Ca}$  and  $^{132}\text{Sn}$ : recent results in Experiment and Theory  
**Conference:** 4<sup>th</sup> Topical Workshop on Modern Aspects in Nuclear Structure  
**Location:** Bormio (I).
- September 2017** **Subject:**The Hybrid Configuration Mixing Model  
**Workshop:** Prospects on the microscopic description of odd mass nuclei and other multi-quasiparticle excitations with beyond-mean-field and related methods  
**Location:** ECT\*, Trento (I)
- September 2017** **Subject:** Valence particle/hole – core excitations couplings: new experimental investigations and novel theoretical approaches  
**Conference:** Congresso Nazionale della Società Italiana di Fisica - SIF17  
**Location:** Trento (I)
- September 2017** **Subject:** Valence particle/hole – core excitations couplings: new experimental investigations and novel theoretical approaches  
**Conference:** XXXV Mazurian Lakes Conference on Physics  
**Location:** Piaski (PL)
- May 2017** **Subject:** Valence particle/hole – core excitations couplings: new experimental investigations and novel theoretical approaches  
**Conference:** 6th Workshop on Nuclear Level Density and Gamma Strength  
**Location:** Oslo (N)
- March 2017** **Subject:** Valence particle/hole – core excitations couplings: new experimental investigations and novel theoretical approaches  
**Conference:** 6th Workshop on Nuclear Fission and Spectroscopy of Neutron-Rich Nuclei  
**Location:** Chamrousse (F)
- October 2016** **Subject:** Single-neutron states and the role of the  $\nu g_{9/2}$  orbital in  $^{71}\text{Zn}$   
**Conference:** 2016 Fall meeting of the APS division of nuclear physics  
**Location:** Vancouver (CDN)
- July 2016** **Subject:** Single-neutron states and the role of the  $\nu g_{9/2}$  orbital in  $^{71}\text{Zn}$   
**Conference:** Direct reaction with exotic beams (DREB16)  
**Location:** Halifax (CDN)
- October 2015** **Subject:** Single-neutron states and the role of the  $\nu g_{9/2}$  orbital in  $^{71}\text{Zn}$   
**Conference:** 2015 Fall meeting of the APS division of nuclear physics  
**Location:** Santa Fe (USA)
- October 2015** **Subject:** Single-neutron states and the role of the  $\nu g_{9/2}$  orbital in  $^{71}\text{Zn}$   
**Conference:** Frontier of  $\gamma$ -ray spectroscopy (Gamma15)  
**Location:** Osaka (J)
- October 2014** **Subject:** Cluster-transfer reactions with radioactive beams: a spectroscopic tool for neutron-rich nuclei  
**Conference:** MINIBALL Workshop  
**Location:** Orsay (F)
- September 2014** **Subject:** Reazioni di trasferimento di cluster di nucleoni con fasci radioattivi  
**Conference:** Congresso nazionale della società italiana di fisica - SIF14  
**Location:** Pisa (I)

- July 2014** **Subject:** Cluster-transfer reactions with radioactive  $^{98}\text{Rb}$  and  $^{98}\text{Sr}$  beams on a  $^7\text{Li}$  target  
**Conference:** Direct reaction with exotic beams (DREB14)  
**Location:** Darmstadt (D)
- May 2014** **Subject:** Nuclear structure studies with heavy ion transfer reactions: present status and perspectives with stable and radioactive beams  
**Conference:** Low-energy reaction dynamics of heavy-ions and exotic nuclei workshop  
**Location:** ECT\*, Trento (I)
- November 2013** **Subject:** Cluster-transfer reactions with radioactive  $^{98}\text{Rb}$  and  $^{98}\text{Sr}$  beams on a  $^7\text{Li}$  target  
**Conference:** ISOLDE workshop  
**Location:** CERN (CH)
- October 2013** **Subject:** Cluster-transfer reactions with radioactive  $^{98}\text{Rb}$  and  $^{98}\text{Sr}$  beams on a  $^7\text{Li}$  target  
**Conference:** MINIBALL workshop  
**Location:** CERN (CH)
- September 2013** **Subject:**  $\gamma$  spectroscopy of neutron-rich nuclei with  $A \approx 100$  produced by cluster-transfer reactions at REX-ISOLDE  
**Conference:** XXXIII Mazurian Lakes conference on physics  
**Location:** Piaski (PL)
- June 2013** **Subject:** Reaction dynamics and  $\gamma$  spectroscopy of Ne isotopes by the heavy ion reaction  $^{22}\text{Ne}+^{208}\text{Pb}$   
**Conference:** International nuclear physics conference 2013 - INPC13  
**Location:** Firenze (I)
- August 2012** **Subject:** Reaction dynamics and  $\gamma$  spectroscopy of Ne isotopes by the heavy ion reaction  $^{22}\text{Ne}+^{208}\text{Pb}$   
**Conference:** XLVII Zakopane conference on nuclear physics  
**Location:** Zakopane (PL)
- June 2012** **Subject:** Reaction dynamics and  $\gamma$  spectroscopy of Ne isotopes by the heavy ion reaction  $^{22}\text{Ne}+^{208}\text{Pb}$   
**Conference:** 13<sup>th</sup> International conference on nuclear reaction mechanisms  
**Location:** Varenna (I)

## Posters

Total number of posters: 1

- July 2019** **Subject:** Exploring the structure of odd-mass isotopes around the  $^{132}\text{Sn}$  neutron-rich nucleus  
**Conference:** XXXVI Mazurian Lakes Conference on Physics  
**Location:** Piaski (PL)

---

## Teaching

- Oct - Dec 2023** Lectures  
**Hours:** 20  
**Course:** Physics  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Health Sciences (TNPEE)
- Oct - Dec 2023** Lectures  
**Hours:** 20  
**Course:** Physics  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Health Sciences (Logopedia)
- June 2023** Lecturer  
**Hours:** 4  
**Course:** Nuclear Physics PhD course "Advanced instrumentation for the study of nuclear structure and reaction dynamics"  
**Subject:** Transfer reactions and models  
**Institute:** Università degli Studi di Padova (I)  
**Department:** Physics
- Mar - Jun 2022-2023** Lectures  
**Hours:** 40  
**Course:** Physics  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Pharmacy
- July 2022** Lecturer  
**Hours:** 8  
**Course:** Nuclear Physics PhD course "Advanced instrumentation for the study of nuclear structure and reaction dynamics"  
**Subject:** Designing a (simple) transfer experiment  
**Institute:** Università degli Studi di Padova (I)  
**Department:** Physics
- Mar - Jun 2021-2022** Lectures  
**Hours:** 16  
**Course:** Physics  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Pharmacy
- Mar - Jun 2021-2022** Lectures  
**Hours:** 24  
**Course:** Physics  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Biotechnology
- Dec - Feb 2020-2021** Art. 45 - assistant and tutor  
**Hours:** 40  
**Course:** Physics 1  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Earth sciences
- Dec - Mar 2019-2020** Art. 45 - assistant and tutor  
**Hours:** 40  
**Course:** Physics 1  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Earth sciences

- May** Lecturer  
**2019** **Hours:** 4  
**Course:** Nuclear Physics PhD course "Advanced instrumentation for the study of nuclear structure and reaction dynamics"  
**Subject:** Direct reactions with FRESCO  
**Institute:** Università degli Studi di Padova (I)  
**Department:** Physics
- Dec - Mar** Art. 45 - assistant and tutor  
**2018-2019** **Hours:** 40  
**Course:** Physics 1  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Earth sciences
- Dec - Mar** Art. 45 - assistant and tutor  
**2017-2018** **Hours:** 40  
**Course:** Physics 1  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Earth sciences
- Mar - Jun** Art. 45 - assistant and tutor  
**2017** **Hours:** 40  
**Course:** General physics  
**Institute:** Università degli Studi di Milano (I)  
**Department:** Biology

## Supervising thesis

Total number of PhD thesis: **2**

- November** Co-supervisor of PhD thesis  
**2023** **Subject:** Shape coexistence in Se isotopes near N=50  
**Candidate:** G. Ciconali  
**Supervisors:** S. Leoni, S. Bottoni, F. Crespi
- November** Co-supervisor of PhD thesis  
**2023** **Subject:** Searching for the microscopic origin of shape coexistence in Ca isotopes  
**Candidate:** M. Luciani  
**Supervisors:** S. Leoni, S. Bottoni

Total number of master thesis: **9**

- January** Co-supervisor of master thesis  
**2023** **Subject:** Studio della coesistenza di forme nucleari negli isotopi di Sn e Cd di massa  $A \approx 100$  con l'apparato AGATA-PRISMA  
**Candidate:** P. Pellegrini  
**Supervisors:** S. Leoni, S. Bottoni, F. Crespi
- September** Supervisor of master thesis  
**2022** **Subject:** Gamma spectroscopy of  $^{42}\text{Ca}$  following neutron-capture reactions on a radioactive target  
**Candidate:** M. Luciani  
**Supervisors:** S. Bottoni, S. Leoni, C. Michelagnoli, N. Cieplicka-Oryńczak

- November** Co-supervisor of master thesis  
**2021** **Subject:**  $\gamma$  decay from the near-neutron-threshold  $2^+$  state in  $^{14}\text{C}$ : a probe of collectivization phenomena in light nuclei  
**Candidate:** G. Corbari  
**Supervisors:** S. Leoni, S. Bottoni, F. Crespi, M. Ciemala
- July** Co-supervisor of master thesis  
**2021** **Subject:** Search for shape coexistence in the  $^{84}\text{Se}$  nucleus by  $\gamma$ -ray spectroscopy  
**Candidate:** G. Ciconali  
**Supervisors:** S. Leoni, S. Bottoni, M. Sfeerrazza
- April** Supervisor of master thesis  
**2021** **Subject:** Study of shape coexistence in the neutron-rich  $^{96}\text{Rb}$  nucleus by lifetime measurements  
**Candidate:** C. Zavaglia  
**Supervisors:** S. Bottoni, S. Leoni, E. Gamba, L. Iskra
- January** Co-supervisor of master thesis  
**2021** **Subject:** Searching for a near-threshold resonant state in  $^{11}\text{B}$   
**Candidate:** E. Albanese  
**Supervisors:** S. Leoni, S. Bottoni
- December** Co-supervisor of master thesis  
**2020** **Subject:** Studio della struttura degli isotopi di Niobio di massa  $A=100$  prodotti con reazioni di fissione indotta da neutroni termici  
**Candidate:** M. Zanol  
**Supervisors:** S. Leoni, S. Bottoni
- March** Co-supervisor of master thesis  
**2019** **Subject:** Study of low-spin structures in  $^{45}\text{Ca}$  by neutron-capture reactions and  $\gamma$ -ray spectroscopy  
**Candidate:** L. Gatti  
**Supervisors:** S. Leoni, S. Bottoni
- September** Co-supervisor of master thesis  
**2018** **Subject:** Lifetime measurements in neutron-rich Sb and Y isotopes produced by thermal-neutron induced fission reactions  
**Candidate:** A. Filippini  
**Supervisors:** S. Leoni, S. Bottoni

Total number of bachelor thesis: **10**

- September** Co-supervisor of bachelor thesis  
**2022** **Subject:** Low-spin study of  $^{83}\text{Se}$  by neutron-capture reactions and  $\gamma$ -ray spectroscopy  
**Candidate:** F. Conca  
**Supervisors:** S. Leoni, S. Bottoni, F. Crespi, M. Sfeerrazza
- September** Co-supervisor of bachelor thesis  
**2020** **Subject:** Misure di vite medie nel nucleo  $^{131}\text{Sb}$  prodotto con reazioni di fissione indotta da neutroni termici  
**Candidate:** N. Brancadori  
**Supervisors:** S. Leoni, S. Bottoni
- May** Co-supervisor of bachelor thesis  
**2020** **Subject:**  $\gamma$ -ray spectroscopy studies of  $^{42}\text{Ca}$  by  $(n,\gamma)$  reactions on a radioactive  $^{41}\text{Ca}$  target  
**Candidate:** L. Foletto  
**Supervisors:** S. Leoni, S. Bottoni

- December** Co-supervisor of bachelor thesis  
**2019** **Subject:** Decadimento  $\gamma$  nel continuo del nucleo  ${}^7\text{Li}$  popolato tramite reazioni di cattura neutronica su bersaglio di  ${}^6\text{LiF}$  con supporto di Mylar  
**Candidate:** M. Micheli  
**Supervisors:** S. Leoni, S. Bottoni
- October** Co-supervisor of bachelor thesis  
**2019** **Subject:** Studio della struttura del nucleo  ${}^{65}\text{Ni}$  a basso spin mediante tecniche di spettroscopia  $\gamma$   
**Candidate:** F. Rallo  
**Supervisors:** S. Leoni, S. Bottoni
- February** Co-supervisor of bachelor thesis  
**2019** **Subject:** Studio del decadimento gamma nel continuo del nucleo  ${}^7\text{Li}$   
**Candidate:** M. Zanol  
**Supervisors:** S. Leoni, S. Bottoni
- June** Co-supervisor of bachelor thesis  
**2018** **Subject:** Study of low-lying structures in  ${}^{72}\text{Zn}$  by  $\gamma$ -ray spectroscopy  
**Candidate:** M. Lazzari  
**Supervisors:** S. Leoni, S. Bottoni
- October** Co-supervisor of bachelor thesis  
**2017** **Subject:** Studio della struttura del nucleo  ${}^{69}\text{Cu}$  tramite spettroscopia  $\gamma$  e reazioni di trasferimento tra ioni pesanti  
**Candidate:** F. Castellano  
**Supervisors:** S. Leoni, S. Bottoni
- October** Co-supervisor of bachelor thesis  
**2017** **Subject:** Spettroscopia  $\gamma$  dei frammenti di fissione  ${}^{131}\text{Sn}$  e  ${}^{132}\text{Sn}$   
**Candidate:** L. Gatti  
**Supervisors:** S. Leoni, S. Bottoni
- March** Co-supervisor of bachelor thesis  
**2017** **Subject:** Misura indiretta del decadimento  $\gamma$  nel continuo del  ${}^7\text{Li}$   
**Candidate:** G. Calvi  
**Supervisors:** S. Leoni, S. Bottoni

## Workshops and Conferences organization

- November** Organizer and chairperson  
**2023** **Workshop:** 2023 User Community Meeting of Laboratori Nazionali di Legnaro  
**Location:** Legnaro (I)
- February** Organizing support  
**2023** **Conference:** VI Topical Workshop on Modern Aspects in Nuclear Structure  
**Location:** Bormio (I)
- January** Organizer  
**2022** **Workshop:** AGATA Geant4 Simulations Workshop  
**Location:** Online
- February** Organizing support  
**2020** **Conference:** V Topical Workshop on Modern Aspects in Nuclear Structure  
**Location:** Bormio (I)
- March** Local organizer  
**2019** **Conference:** Workshop AGATA@LNL for stable beams  
**Location:** LNL - Padova (I)

- September 2018** Organizing support  
**Conference:** NUSTAR week 2018  
**Location:** Milano (I)
- February 2018** Organizing support  
**Conference:** IV Topical Workshop on Modern Aspects in Nuclear Structure  
**Location:** Bormio (I)
- September 2017** Local organizer  
**Conference:** XVIII AGATA week  
**Location:** Milano (I)

## Referee of peer-reviewed journals and editing

Total number of referee reports: **21**

- 2020 - pres.** Nuovo Cimento (SIF): 3 reports  
**2019 - pres.** Nuclear Science and Techniques (Springer): 1 report  
**2019 - pres.** Europhysics Letter (IOP and SIF): 1 report  
**2018 - pres.** Nuclear Physics A (Elsevier): 5 reports  
**2016 - pres.** Physical Review C (APS): 6 reports  
**2016 - pres.** Physical Review Letters (APS): 5 reports
- January 2014** Editing ERINDA (European Research Infrastructure for Nuclear Data Applications) workshop conference proceeding
- December 2012** Editing Varenna conference proceeding 13<sup>th</sup> International Conference on Nuclear Reaction Mechanisms

## Outreach

- 2022 - pres.** Promoter and organizer of the event "Nuclei: i mattoncini dell'Universo" held in September during the European Research Night at Museo della Scienza e della Tecnica of Milan. The aim is to spread nuclear physics concepts and discoveries among the population with interactive activities and demonstrations.
- February 2021** Participation in the project "Volontari per l'Educazione" promoted by Università degli Studi di Milano, other Italian's Universities and Save the Children to counteract the early school leaving of students at risk of learning loss due to the Covid-19 pandemic.
- November 2020** Promoter and organizer of the event "Viaggio dai nuclei alle stelle" aimed at spreading nuclear physics concepts and discoveries among the population. The project has been selected upon review to represent Università degli Studi di Milano at Meet Me Tonight 2020 during the European Research Night.

## Computer skills

- OS** Windows, Linux, Mac OS X
- Programm.** Office, C, C++, Fortran, MATHEMATICA, Latex
- Data Analysis** GASPWARE , RADWARE, ROOT  
Origin, QtiPlot, gnuplot, XMgrace
- Simulations** GEANT4, SRIM
- Nuclear Reactions** LISE++, FRESCO, PTOLEMY, TWOFNR, CASCADE, GRAZING
- Nuclear Structure** ANTOINE, CENS, SKYRME\_RPA

---

## Language skills

**Italian** Mother tongue

**English** Advanced

**French** Intermediate

---

## Research activities

My research activity is carried out within the GAMMA collaboration of CSN3 - INFN and is primarily devoted to the experimental study of the structure and dynamics of light and medium/heavy neutron-rich nuclei, as a function of the proton-to-neutron ratio, moving away from the valley of stability towards the neutron drip line. In particular, I am interested in the modification of shell structure, as a consequence of the unbalanced isospin, which leads to drastic changes in level ordering, shell closures, shapes of the nuclear surface, electromagnetic properties of  $\gamma$  decays, single-particle/hole configurations, and particle/hole-core couplings.

The regions of the nuclide chart I am working on the most are those around the neutron-rich Ca ( $Z=20$ ), Ni ( $Z=28$ ), Zn ( $Z=30$ ), Sn ( $Z=50$ ) and Zr ( $Z=40$ ) closed- and mid-shell isotopes. Moreover, I dedicate part of my activity to the study of light nuclei, such as  ${}^7\text{Li}$ ,  ${}^{11}\text{Be}$ ,  ${}^{11}\text{B}$ ,  ${}^{14}\text{C}$  to investigate structures in the continuum and their decay properties. These studies are aimed at a comprehensive microscopic description of atomic nuclei as many-body quantum systems, in terms of nucleon-nucleon interactions and nuclear forces. For these purposes, the interpretation of experimental data through cutting-edge theoretical models, such as large-scale shell models, beyond mean-field approaches or *ab initio* methods, is a fundamental brick of my research projects. On top of this, part of my studies is dedicated to the experimental investigation of the mechanism and dynamics of transfer reactions between heavy-ions (multinucleon transfers and deep-inelastic collisions), as well as one-, two-nucleon and cluster-transfer reactions involving light nuclei, such as  ${}^2\text{H}$ ,  ${}^3\text{H}$  and  ${}^7\text{Li}$ . Specifically, I am focused on direct reactions in inverse kinematics investigated by DWBA or coupled-channel models, used as tools to interpret experimental cross sections, with special attention to the effects of the continuum in the transfer process. The exotic nuclear species I study are produced in nuclear reactions induced by stable and radioactive heavy-ion beams, as well as neutron beams, on both stable and radioactive target materials and their features are investigated by combining  $\gamma$ -ray and particle spectroscopy techniques. For this goal, I use state-of-the-art high-resolution, high-efficiency HPGe  $\gamma$  arrays, LaBr<sub>3</sub> scintillators, charged-particle detectors and magnetic spectrometers.

The experimental techniques I use are, among others,  $\gamma$ -ray coincidence techniques, lifetime measurements with DSAM, plunger and fast-timing methods,  $\gamma$ -ray and particle angular distributions. Typical nuclear reactions I perform are transfer reactions between heavy ions above and below the Coulomb barrier, cluster-transfer reactions, direct reactions such as (d,p) and (t,p) in inverse kinematics, as well as neutron capture and neutron-induced fission reactions. Moreover, I investigate the feasibility of experiments and the response of  $\gamma$ -ray and particle detectors by performing realistic simulations with GEANT4.

My activity is carried out in national and international laboratories worldwide, equipped with modern facilities for the production and acceleration of stable and radioactive beams, as well as nuclear reactors providing high-intensity neutron beams. These are LNL (Italy), ISOLDE (CERN), GANIL (France), ARGONNE (U.S.A), IFIN-HH (Romania), ILL (France), ALTO (France). The experimental setups I use in my studies are, for instance, AGATA, MINIBALL, GALILEO, GAMMASPHERE, ROSPHERE, FIPPS (HPGe arrays for  $\gamma$ -ray spectroscopy), fast LaBr<sub>3</sub> detectors, TRACE, MUGAST, CHICO2, T-REX, ISS (charged-particle detectors), PRISMA and VAMOS (magnetic spectrometers).

### Personal contribution to the research activities:

- Planning of experiments under my direct responsibility as a spokesperson. This includes the study of the physics cases, the evaluation of the most suitable experimental techniques and setups and of the feasibility of the measurements, the preparation and defense of the proposals, the mounting, maintenance and calibration of the experimental setups, the monitoring of the experiment, data taking

and data analysis. For the latter, in some cases I am also in charge of the development of analysis codes and methods to treat complex data taken with composite detectors for  $\gamma$ -ray and particle spectroscopy, as well as simulations with the GEANT4 package. These activities are documented in the "leadership" section and are summarized as follows:

**(2012 - pres.) Laboratori Nazionali di Legnaro - Italy:** I worked on different data set of multinucleon transfer reactions in the calcium and neon regions, using the CLARA  $\gamma$  array coupled to the PRISMA magnetic spectrometer. For this, I contributed to the calibration of the setup, the data analysis, the interpretation of the results and the preparation of the papers. Part of this activity is documented in Phys. Rev. C 85, 044301 (2012) and Phys. Rev. C 85, 064621 (2012). I also participated in the campaign of the AGATA demonstrator, taking care of the monitoring of the experiments and data taking. I gave a direct contribution to the publication Phys. Rev. Lett. 113, 012501 (2014) by performing calculations for the  $^{17}\text{O}+^{208}\text{Pb}$  inelastic scattering, by using the FRESCO code. More recently, I extensively participated in the ongoing AGATA campaign at LNL since its initial installation phase, which is documented in Nucl. Instr. Meth. A 1049, 168040 (2023). I presented two proposals to study nuclei in the vicinity of  $^{68}\text{Ni}$  and in the Island of Inversion at  $N=20$ , combining  $\gamma$ -ray spectroscopy and lifetime measurements using the AGATA array coupled to the PRISMA magnetic spectrometer. The experiments have been approved by the LNL PAC and partially run in Spring 2023 and I will supervise the work of a master student devoted to this. Moreover, in 2022 I was convener of the working group "Light and medium-mass exotic nuclei" for the Nuclear Physics Mid Term Plan in Italy of LNL. I coordinated the activity of the group composed by national and international experts to define the future activities of the laboratories in the next years in this specific research field. Part of the proposed experiments and developments are related to the ongoing construction of the SPES facility at LNL for the production and post-acceleration of radioactive beams using the ISOL technique. The activities of the working group are reported in Eur. Phys. J. Plus 138, 709 (2023). Finally, I supervised the work of a master student devoted to the analysis of a GALILEO-TRACE experiment proposed by the groups of Milan and Krakow to study the  $\gamma$  decay of  $^{11}\text{B}$  from a possible near-threshold state in the continuum. I finalized the analysis and I prepared a paper as a first author which will be submitted to Phys. Lett. B.

**(2012 - pres.) ISOLDE - CERN:** I studied cluster transfer reactions with  $^{98}\text{Rb}$  and  $^{98}\text{Sr}$  radioactive beams and a  $^7\text{Li}$  target, combining  $\gamma$ -ray and particle spectroscopy with the MINIBALL-T-REX setup. I took care of the preparation and calibration of the setup, data taking and analysis, partially developing the code of analysis based on C++ and ROOT. I also performed DWBA calculations by using the FRESCO code to interpret the experimental cross sections, as presented in Phys. Rev. C 92, 024322 (2015) as a result of my PhD work. In 2023 I coordinated an experiment proposed by the groups of Milan and Krakow to study cluster-transfer reactions with a  $^{132}\text{Sn}$  radioactive beam and a  $^7\text{Li}$  target with the MINIBALL-T-REX setup and the analysis will be under my responsibility. In the same year, I defended an experiment to study shape coexistence in  $^{80}\text{Zn}$  using two-neutron transfer reactions with a  $^3\text{H}$  radioactive target and the Isolde Solenoid Spectrometer. For this, I prepared the proposal, including the physics case, DWBA calculations and simulations and the project is currently under evaluation.

**(2015 - pres): Argonne National Laboratory - U.S.A:** I participated in the GRETINA and GAMMASPHERE experimental campaigns, including the coupling with ancillary detectors for particle detection and lifetime measurements, providing support to the mounting and maintenance of the experimental setups, monitoring of the experiments, data taking and analysis. I was particularly involved in the study of transfer and fusion reactions, such as the  $^{48}\text{Ca}+^{70}\text{Zn}$  reaction - I was directly in charge of the analysis, data interpretation and the preparation of the paper- the  $^{12}\text{C}+^{12}\text{C}$  and  $^{90}\text{Zr}+^7\text{Li}$  reactions, and of the spontaneous fission of  $^{252}\text{Cf}$ . These works are presented in the publications Phys. Lett. B 775, 271 (2017), Phys. Rev. C 97, 012801(R) (2018), Nature 554, 216 (2018) , and Phys. Rev. C 100, 044309 (2019). I was also much involved in the HELIOS campaign to study transfer

reactions, to which I contributed by preparing the setup, monitoring the experiments, taking data and discussing the results as in the case of Phys. Rev. Lett. 120, 122503 (2018). Moreover, I proposed an experiment, approved by the PAC, to study the  $^{98,100}\text{Zr}(d,p\gamma)$  reactions by using radioactive beams provided by the CARIBU facility. More recently, I participated in an experiment proposed by the groups of Milan and Krakow to study the  $\gamma$  decay of  $^{14}\text{C}$  from near-threshold states and I supervised the work of a master student dedicated to this experiment. A paper to be submitted to Phys. Lett. B is in preparation.

**(2017 - pres) GANIL - France:** I took part in the AGATA-VAMOS campaign performing experiments with stable and radioactive beams. Part of the activities related to lifetime measurements in  $^{20}\text{O}$  performed by the groups of Milan and Krakow are documented in Phys. Rev. C 101, 021303(R) (2020). I closely collaborated to the interpretation of particle angular distributions measured in the  $^{46}\text{Ar}(^3\text{He},d)$  experiment, proposed by the group of Padova, using DWBA methods and I took part in the preparation of a paper submitted to Nature. Moreover, I presented a Letter of Intent to develop radioactive beams to study (t,p) reactions in inverse kinematics with AGATA-MUGAST. I also defended a proposal to investigate rotational states in the continuum of  $^{11}\text{Be}$  using (d,p) reactions and the MUGAST-EXOGRAM setup at the LISE fragmentation facility. For this, I extensively performed first-order and second-order DWBA calculations in collaboration with Prof. A. Moro to investigate the effects of different coupling schemes including the continuum. Finally, in 2023 I was involved in the commissioning of the MUGAST-EXOGRAM setup at LISE and I participated in the experimental campaign.

**(2017 - pres) Institute Laue-Langevin and ALTO - France:** I studied different neutron-induced reactions, using HPGe  $\gamma$  arrays and charged particle detectors. In particular, I proposed and run a series of experiments to study the low-spin structure of Ca isotopes between doubly closed shells populated by neutron-capture reactions with the EXILL and FIPPS setups. More recently, I investigated with the same reaction technique  $^{83}\text{Se}$  and Pt isotopes. In all cases, I took care of the preparation of the proposals, the preparation and calibration of the setups, the coordination of the experiments, data taking, analysis and interpretation of the results. In this context, I'm supervising bachelor, master and PhD students working on these topics. Part of the results are already published in Phys. Rev. C 103, 014320 (2021) as well as in other works to which I contributed such as Phys. Rev. C 102, 064310 (2020) and Phys. Rev. Lett. 125, 102502 (2020). I also worked on neutron-induced fission reactions of different targets, such as  $^{235}\text{U}$ ,  $^{241}\text{Pu}$ ,  $^{238}\text{U}$ ,  $^{232}\text{Th}$ , studied in the FIPPS, EXILL, LOHENGRIN and LICORNE experimental campaigns. In this regard, I contributed to the preparation of the setups, the monitoring of the experiments and data taking and I developed part of the softwares of analysis based on C++, ROOT and the GASPPWARE package. Part of the results are published in Nature 590, 566 (2021), Phys. Rev. C 102, 054324 (2020), Phys. Rev. C 102, 064323 (2020), Phys. Lett. B 760, 273 (2016). In particular, results on  $^{131}\text{Sb}$  are published in Phys. Rev. C 107, 014322 (2023) (S. Bottoni first author) and results on  $^{96}\text{Rb}$  have just been accepted in Phys. Rev. C (S. Bottoni corresponding author). Finally, I worked on a series of experiments to study the  $\gamma$ -ray decay in the continuum of  $^7\text{Li}$  populated in the  $n+^6\text{Li}$  cold-neutron-capture reaction, to which I contributed by preparing and mounting the experimental setup, monitoring the experiments, taking data, developing the analysis code and analyzing the data. Also in this case, a publication as a first author is being finalized.

**(2017 - pres) Horia Hulubei National Institute - Romania:** I studied different transfer reactions below the Coulomb Barrier in the nichel and zinc mass regions. In particular, I contributed to the experiments with the preparation of the setup, the monitoring and data taking and data analysis. Some results are published in Phys. Rev. Lett. 125, 102502 (2020). In particular, I proposed, coordinated and run an experiment to study the structure of  $^{72}\text{Zn}$  by  $\gamma$ -ray spectroscopy using the ROSPHERE array and I am in charge of the analysis, including the measurement of lifetimes with DSAM techniques and the comparison with simulations of the line shapes. I'm also involved in several proposals presented by our collaboration to study shape coexistence in  $^{84}\text{Se}$  and Sn isotopes with different experimental technique. In this context, I'm supervising the work of a PhD student.

- Simulations of the performances of  $\gamma$  arrays and charged-particle detectors and studies of the feasibility of transfer experiments with silicon detectors. This activity mainly concerns the AGATA HPGe  $\gamma$  array and the GRIT project, to which I contribute directly by performing simulations using GEANT4 and by studying the kinematics and the cross sections of transfer reactions using different theoretical approaches. Details of the two projects are described here below:

**(2019 - pres) AGATA:** I am an active member of the "performance" working group for the AGATA array at Laboratori Nazionali di Legnaro, with the experimental campaign with stable beams started in 2022. I contributed to the development of the simulation code based on GEANT4, in particular to implement the new scattering chamber. I performed several simulations to optimize the size of the scattering chamber and the shielding materials of the side chamber, in order to maximize the detection efficiency and minimize, at the same time, the radiation coming from the beam dump. This activity also includes a series of source and in-beam measurements to study the response of the detectors in terms of efficiency, energy resolutions,  $\gamma$ -ray tracking optimization, cross-talk and neutron damage corrections which will be compared with simulations. More recently, I presented a Letter of Intent to evaluate the performances of AGATA at medium/high energy (3-5 MeV) which has been endorsed by the LNL PAC. The proposal is in preparation.

**(2020 - pres) GRIT:** I am the leader of the "physics simulation" working group and member of the management board of the GRIT project. GRIT is a new type of compact, high granularity,  $4\pi$  acceptance Silicon array, designed to be coupled with  $\gamma$  arrays, such as AGATA, to study direct reactions. This array is meant to offer superior particle identification with pulse-shape discrimination techniques by using digital electronics. I contribute to this project by performing simulations with GEANT4 of the response of the array, at the moment consisting in the preliminary configuration called MUGAST. These simulations are aimed at evaluating the feasibility of transfer experiments employing different reactions with light nuclei. To this purpose, I also contribute to the study of possible physics cases by studying reaction cross sections using DWBA or Coupled Channels methods with the FRESKO code, including couplings with core excitations, two-step processes and transfer to the continuum. As an example, I recently studied the feasibility of the  $^{10}\text{Be}(d,p)$  reaction to investigate rotational bands in the continuum of  $^{11}\text{Be}$ , combining calculations and simulations of the MUGAST setup at the LISE spectrometer at GANIL (France). More recently, I presented the possible physics campaign of GRIT at LNL, especially in connection with AGATA and SPES beams, in a dedicated workshop.

- Development and extension of the Hybrid Configuration Mixing Model under the supervision of Prof. G. Colò from the theory group of Milano. In the recent years, I dedicated part of my activity to nuclear theory, contributing directly to the improvement of the Hybrid Configuration Mixing Model, designed to describe, from a microscopic point of view, couplings between collective vibrations (phonons) and non-collective core excitations of doubly magic nuclei with single-particle or hole degrees of freedom. The model is based on an Hamiltonian of Skyrme type and includes single-particle-hole states coming from Hartree-Fock calculations and core states emerging from Random Phase Approximation calculations. I contributed to this model by studying its convergence properties and by extending the formalism to the hole-core coupling case. Part of the results of this activity are published in Phys. Rev. C 103, 014320 (2021), Acta Phys. Pol. B 50, 285 (2019), EPJ Web of Conference 193, 05001 (2018) and Phys. Lett. B 760, 273 (2016).

The synergy between experiment and theory, as well as collaborations with national and international research groups, have given me a broader perception of open questions and unsolved problems in nuclear physics, stimulating new ideas and possible future activities.

## Publications in peer-reviewed journals

Total number of peer-reviewed publications: **75**

Nature: **3**  
Phys. Rev. Lett: **8**  
Phys. Lett. B: **11**  
Phys. Rev. C: **40**  
Eur. Phys. J. A: **4**  
Nucl. Inst. Meth. A: **4**  
Eur. Phys. Lett.: **1**  
Phys. Scripta: **2**  
Eur. Phys. J. Plus **1**  
Journ. Instr.: **1**

- October** **Authors:** E. R. Gamba, [S. Bottoni](#) et al.  
**2023** **Subject:** Lifetime measurements in  $^{96}\text{Rb}$  via fast-timing techniques: Investigating shape coexistence at  $A \approx 100$   
**Journal:** Accepted in Phys. Rev. C
- August** **Authors:** M. Ballan et al.  
**2023** **Subject:** Nuclear physics midterm plan at Legnaro National Laboratories (LNL)  
**Journal:** Eur. Phys. J. Plus 138, 709 (2023)
- July** **Authors:** M. Labiche et al.  
**2023** **Subject:** Simulation of the AGATA spectrometer and coupling with ancillary detectors  
**Journal:** Eur. Phys. J. A 59, 158 (2023)
- July** **Authors:** D. Thisse et al.  
**2023** **Subject:** Study of  $N=50$  gap evolution around  $Z=32$ : new structure information for  $^{82}\text{Ge}$   
**Journal:** Eur. Phys. J. A 59, 153 (2023)
- June** **Authors:** S. Hellgartner et al.  
**2023** **Subject:** Axial and triaxial degrees of freedom in  $^{72}\text{Zn}$   
**Journal:** Phys. Lett. B 841, 137933 (2023)
- April** **Authors:** J.J. Valiente-Dobón et al.  
**2023** **Subject:** Conceptual design of the AGATA  $2\pi$  array at LNL  
**Journal:** Nucl. Inst. Meth. A 1049, 168040 (2023)
- January** **Authors:** [S. Bottoni](#) et al.  
**2023** **Subject:** Testing the predictive power of realistic shell model calculations via lifetime measurement of the  $11/2^+$  state in  $^{131}\text{Sb}$   
**Journal:** Phys. Rev. C 107, 014322 (2023)
- November** **Authors:** N. Cieplicka-Oryńczak et al.  
**2022** **Subject:** The decay of the 21.47-MeV stretched resonance in  $^{13}\text{C}$ : A precise probe of the open nuclear quantum system description  
**Journal:** Phys. Lett. B 834, 137398 (2022)
- November** **Authors:** T.J. Gray et al.  
**2022** **Subject:** E2 rotational invariants of  $0_1^+$  and  $2_1^+$  states for  $^{106}\text{Cd}$ : The emergence of collective rotation  
**Journal:** Phys. Lett. B 834, 137446 (2022)
- June** **Authors:** A.K. Mistry et al.  
**2022** **Subject:** The DESPEC setup for GSI and FAIR  
**Journal:** Nucl. Inst. Meth. A 1033, 166662 (2022)

- January** **Authors:** B. Wasilewska et al.  
**2022** **Subject:** decay to the ground state from the excitations above the neutron threshold in the  $^{208}\text{Pb}(p,p'\gamma)$  reaction at 85 MeV  
**Journal:** Phys. Rev. C 105, 014310 (2022)
- November** **Authors:** A. Goasduff et al.  
**2021** **Subject:** The GALILEO  $\gamma$ -ray array at the Legnaro National Laboratories  
**Journal:** Nucl. Inst. Meth. A 1015, 165753 (2021)
- November** **Authors:** D.T. Doherty et al.  
**2021** **Subject:** Solving the Puzzles of the Decay of the Heaviest Known Proton-Emitting Nucleus  $^{185}\text{Bi}$   
**Journal:** Phys. Rev. Lett. 127, 202501 (2021)
- October** **Authors:** S. Ziliani et al.  
**2021** **Subject:** Complete set of bound negative-parity states in the neutron-rich nucleus  $^{18}\text{N}$   
**Journal:** Phys. Rev. C 104, L041301 (2021)
- July** **Authors:** G. Häfner et al.  
**2021** **Subject:** First lifetime investigations of  $N>82$  iodine isotopes: The quest for collectivity  
**Journal:** Phys. Rev. C 104, 014316 (2021)
- May** **Authors:** M. Ciemala et al.  
**2021** **Subject:** Accessing tens-to-hundreds femtoseconds nuclear state lifetimes with low-energy binary heavy-ion reactions  
**Journal:** Eur. Phys. J. A 57, 156 (2021)
- March** **Authors:** G. Häfner et al.  
**2021** **Subject:** Spectroscopy and lifetime measurements in  $^{134,136,138}\text{Te}$  isotopes and implications for the nuclear structure beyond  $N=82$   
**Journal:** Phys. Rev. C 103, 034317 (2021)
- February** **Authors:** J. N. Wilson et al.  
**2021** **Subject:** Angular momentum generation in nuclear fission  
**Journal:** Nature 590, 566 (2021)
- February** **Authors:** A. J. Mitchell et al.  
**2021** **Subject:** Ground-state and decay properties of neutron-rich  $^{106}\text{Nb}$   
**Journal:** Phys. Rev. C 103, 024323 (2021)
- January** **Authors:** S. Bottoni et al.  
**2021** **Subject:** Low-spin particle-core and hole-core excitations in  $^{41,47,49}\text{Ca}$  isotopes studied by cold-neutron-capture reactions  
**Journal:** Phys. Rev. C 103, 014320 (2021)
- December** **Authors:** R.-B. Gerst et al.  
**2020** **Subject:** Prompt and delayed  $\gamma$  spectroscopy of neutron-rich  $^{94}\text{Kr}$  and observation of a new isomer  
**Journal:** Phys. Rev. C 102, 064323 (2020)
- December** **Authors:** R. Avigo et al.  
**2020** **Subject:** Low-lying electric dipole  $\gamma$ -continuum for the unstable  $^{62,64}\text{Fe}$  nuclei: Strength evolution with neutron number  
**Journal:** Phys. Lett. B 811, 135951 (2020)
- December** **Authors:** C. Porzio et al.  
**2020** **Subject:** Detailed low-spin spectroscopy of  $^{65}\text{Ni}$  via neutron capture reaction  
**Journal:** Phys. Rev. C 102, 064310 (2020)

- November 2020** **Authors:** L. W. Iskra et al.  
**Subject:**  $\gamma$  spectroscopy of the  $^{96}\text{Y}$  isotope: Searching for the onset of shape coexistence before  $N = 60$   
**Journal:** Phys. Rev. C 102, 054324 (2020)
- November 2020** **Authors:** M. Rocchini et al.  
**Subject:** g factor of the  $12^+$  K-isomer in  $^{174}\text{W}$   
**Journal:** Eur. Phys. J. A 56, 289 (2020)
- September 2020** **Authors:** N. Marginean et al.  
**Subject:** Shape Coexistence at Zero Spin in  $^{64}\text{Ni}$  Driven by the Monopole Tensor Interaction  
**Journal:** Phys. Rev. Lett. 125, 102502 (2020)
- April 2020** **Authors:** D. J. Hartley et al.  
**Subject:** High-K, two-quasiparticle states in  $^{160}\text{Gd}$   
**Journal:** Phys. Rev. C 101, 044301 (2020)
- April 2020** **Authors:** G. Montagnoli et al.  
**Subject:** Fusion of  $^{12}\text{C}+^{24}\text{Mg}$  far below the barrier: Evidence for the hindrance effect  
**Journal:** Phys. Rev. C 101, 044608 (2020)
- March 2020** **Authors:** N. Cieplicka-Oryńczak et al.  
**Subject:** Contrasting properties of particle-particle and hole-hole excitations in  $^{206}\text{Tl}$  and  $^{210}\text{Bi}$  nuclei  
**Journal:** Phys. Lett. B 802, 135222 (2020)
- February 2020** **Authors:** M. Rudigier et al.  
**Subject:** Multi-quasiparticle sub-nanosecond isomers in  $^{178}\text{W}$   
**Journal:** Phys. Lett. B 801, 024313 (135140)
- February 2020** **Authors:** R. L. Canavan et al.  
**Subject:** Half-life measurements in  $^{164,166}\text{Dy}$  using  $\gamma$ - $\gamma$  fast-timing spectroscopy with the  $\nu$ -Ball spectrometer  
**Journal:** Phys. Rev. C 101, 024313 (2020)
- February 2020** **Authors:** M. Ciemala et al.  
**Subject:** Testing ab initio nuclear structure in neutron-rich nuclei: Lifetime measurements of second  $2^+$  state in  $^{16}\text{C}$  and  $^{20}\text{O}$   
**Journal:** Phys. Rev. C 101, 021303(R) (2020)
- October 2019** **Authors:** E. Gamba et al.  
**Subject:** Fast-timing measurements in the ground-state band of  $^{114}\text{Pd}$   
**Journal:** Phys. Rev. C 100, 044309 (2019)
- May 2019** **Authors:** K. Auranen et al.  
**Subject:** Proton decay of  $^{108}\text{I}$  and its significance for the termination of the astrophysical rp-process  
**Journal:** Phys. Lett. B 792, 187 (2019)
- January 2019** **Authors:** A. Gade et al.  
**Subject:** Structure of  $^{70}\text{Fe}$ : Single-particle and collective degrees of freedom  
**Journal:** Phys. Rev. C 99, 011301(R) (2019)
- October 2018** **Authors:** K. Auranen et al.  
**Subject:** Superallowed  $\alpha$  Decay to Doubly Magic  $^{100}\text{Sn}$   
**Journal:** Phys. Rev. Lett. 121, 182501 (2018)
- July 2018** **Authors:** W. Reviol et al.  
**Subject:** Low-spin structure of the  $N=82$  nucleus  $^{137}\text{Cs}$   
**Journal:** Phys. Rev. C. 98, 014328 (2018)

- May** **Authors:** D. J. Hartley et al.  
**2018** **Subject:** Masses and  $\beta$ -decay spectroscopy of neutron-rich odd-odd  $^{160,162}\text{Eu}$  nuclei: evidence for a subshell gap with large deformation at  $N = 98$   
**Journal:** Phys. Rev. Lett. 120, 182502 (2018)
- April** **Authors:** J. Litzinger et al.  
**2018** **Subject:** Transition probabilities in neutron-rich  $^{80,82}\text{Se}$  and the role of the  $\nu g_{9/2}$  orbital  
**Journal:** Phys. Rev. C. 97, 044323 (2018)
- March** **Authors:** D. Santiago-Gonzalez et al.  
**2018** **Subject:** Probing the single-particle character of rotational states in  $^{19}\text{F}$  using a short-lived isomeric beam  
**Journal:** Phys. Rev. Lett. 120, 122503 (2018)
- February** **Authors:** M. D. Jones et al.  
**2018** **Subject:** Examination of the low-energy enhancement of the  $\gamma$ -ray strength function of  $^{56}\text{Fe}$   
**Journal:** Phys. Rev. C 97, 024327 (2018)
- February** **Authors:** G. Montagnoli et al.  
**2018** **Subject:** Fusion hindrance for the positive Q-value system  $^{12}\text{C} + ^{30}\text{Si}$   
**Journal:** Phys. Rev. C 97, 024610 (2018)
- February** **Authors:** C. J. Chiara et al.  
**2018** **Subject:** Isomer depletion as experimental evidence of nuclear excitation by electron capture  
**Journal:** Nature 554, 216 (2018)
- January** **Authors:** C. L. Jiang et al.  
**2018** **Subject:** Reaction rate for carbon burning in massive stars  
**Journal:** Phys. Rev. C 97, 012801(R) (2018)
- December** **Authors:** S. Bottoni et al.  
**2017** **Subject:** Nucleon correlations and the structure of  $^{71}_{30}\text{Zn}_{41}$   
**Journal:** Phys. Lett. B 775, 271 (2017)
- November** **Authors:** M. Jentschel et al.  
**2017** **Subject:** EXILL - A high-efficiency, high-resolution setup for  $\gamma$ -spectroscopy at an intense cold neutron beam facility  
**Journal:** Journ. of Instrum. 12, P11003 (2017)
- October** **Authors:** F. Didierjean et al. et al.  
**2017** **Subject:** Neutron effective single-particle energy above  $^{78}\text{Ni}$ : a hint from lifetime measurements in the  $N=51$  isotones  $^{85}\text{Se}$  and  $^{87}\text{Kr}$   
**Journal:** Phys. Rev. C 96, 044320 (2017)
- September** **Authors:** L. Iskra et al.  
**2017** **Subject:** Medium and high spin structure in the  $^{94}\text{Y}$  isotope produced in fission induced by cold neutrons  
**Journal:** Phys. Script. 92, 104001 (2017)
- August** **Authors:** S. Almarez-Calderon et al.  
**2017** **Subject:** Study of the  $^{26m}\text{Al}(d,p)^{27}\text{Al}$  reaction and the influence of the  $^{26}\text{Al} 0^+$  isomer on the destruction of  $^{26m}\text{Al}$  in the Galaxy  
**Journal:** Phys. Rev. Lett. 119, 072701 (2017)
- June** **Authors:** P. R. John et al.  
**2017** **Subject:** In-beam  $\gamma$ -ray spectroscopy of the neutron-rich platinum isotope  $^{200}\text{Pt}$  toward the  $N=126$  shell gap  
**Journal:** Phys. Rev. C. 95, 064321 (2017)

- January** **Authors:** S. Ceruti et al.  
**2017** **Subject:** Experimental study of the isovector giant dipole resonance in  $^{80}\text{Zr}$  and  $^{81}\text{Rb}$   
**Journal:** Phys. Rev. C 95, 014312 (2017)
- January** **Authors:** L. Iskra et al.  
**2017** **Subject:** New isomer in  $^{96}\text{Y}$  marking the onset of deformation at  $N=57$   
**Journal:** Europ. Phys. Lett. 117, 12001 (2017)
- September** **Authors:** G. Bocchi et al.  
**2016** **Subject:** The mutable nature of particle-core excitations with spin in the one-valence-proton nucleus  $^{133}\text{Sb}$   
**Journal:** Phys. Lett. B 760, 273 (2016)
- September** **Authors:** W. Reviol et al.  
**2016** **Subject:** One-neutron transfer study of  $^{137}\text{Xe}$  and systematics of  $13/2_1^+$  and  $13/2_2^+$  levels in  $N=83$  nuclei  
**Journal:** Phys. Rev. C 94, 034309 (2016)
- July** **Authors:** N Cieplicka-Oryńczak et al.  
**2016** **Subject:** Multipolarity of the  $2^- \rightarrow 1^-$ , ground-state transition in  $^{210}\text{Bi}$  via multivariable angular correlation analysis  
**Journal:** Phys. Rev. C 94, 014311 (2016)
- May** **Authors:** N. Cieplicka-Oryńczak et al.  
**2016** **Subject:** Approaching complete low-spin spectroscopy of  $^{210}\text{Bi}$  with a cold-neutron capture reaction  
**Journal:** Phys. Rev. C 93, 054302 (2016)
- April** **Authors:** M. Krzysiek et al.  
**2016** **Subject:** Pygmy dipole resonance in  $^{140}\text{Ce}$  via inelastic scattering of  $^{17}\text{O}$   
**Journal:** Phys. Rev. C 93, 044330 (2016)
- December** **Authors:** J. Litzinger et al.  
**2015** **Subject:** Transition probabilities in neutron-rich  $^{84,86}\text{Se}$   
**Journal:** Phys. Rev. C 92, 064322 (2015)
- November** **Authors:** S. Ceruti et al.  
**2015** **Subject:** Isospin mixing in  $^{80}\text{Zr}$ : from finite to zero temperature  
**Journal:** Phys. Rev. Lett. 115, 222502 (2015)
- August** **Authors:** S. Bottoni et al.  
**2015** **Subject:** Cluster-transfer reactions with radioactive beams: A spectroscopic tool for neutron-rich nuclei  
**Journal:** Phys. Rev. C 92, 024322 (2015)
- July** **Authors:** L. Pellegrini et al.  
**2015** **Subject:** Multitude of  $2^+$  discrete states in  $^{124}\text{Sn}$  observed via the  $(^{17}\text{O}, ^{17}\text{O}'\gamma)$  reaction: Evidence for pygmy quadrupole states  
**Journal:** Phys. Rev. C 92, 014330 (2015)
- February** **Authors:** F. C. L. Crespi et al.  
**2015** **Subject:**  $1^-$  and  $2^+$  discrete states in  $^{90}\text{Zr}$  populated via the  $(^{17}\text{O}, ^{17}\text{O}'\gamma)$  reaction  
**Journal:** Phys. Rev. C 91, 024323 (2015)
- January** **Authors:** R. Orlandi et al.  
**2015** **Subject:** Single-neutron orbits near  $^{78}\text{Ni}$ : Spectroscopy of the  $N=49$  isotope  $^{79}\text{Zn}$   
**Journal:** Phys. Lett. B 740, 298 (2015)
- November** **Authors:** L. Pellegrini et al.  
**2014** **Subject:** Pygmy dipole resonance in  $^{124}\text{Sn}$  populated by inelastic scattering of  $^{17}\text{O}$   
**Journal:** Phys. Lett. B 738, 519 (2014)

- August** **Authors:** P. R. John et al.  
**2014** **Subject:** Shape evolution in the neutron-rich osmium isotopes: Prompt  $\gamma$ -ray spectroscopy of  $^{196}\text{Os}$   
**Journal:** Phys. Rev. C 90, 021301(R) (2014)
- July** **Authors:** F. C. L. Crespi et al.  
**2014** **Subject:** Isospin character of low-lying Pygmy Dipole states in  $^{208}\text{Pb}$  via Inelastic Scattering of  $^{17}\text{O}$  Ions  
**Journal:** Phys. Rev. Lett 113, 012501 (2014)
- June** **Authors:** C. R. Niță et al.  
**2014** **Subject:** Fast-timing lifetime measurements of excited states in  $^{67}\text{Cu}$   
**Journal:** Phys. Rev. C 89, 064314 (2014)
- May** **Authors:** G. Bocchi et al.  
**2014** **Subject:** Probing particle-phonon-coupled states in the neutron-rich nucleus  $^{65}\text{Cu}$  by lifetime measurements with fast-timing techniques  
**Journal:** Phys. Rev. C 89, 054302 (2014)
- January** **Authors:** M. Krzysiek et al.  
**2014** **Subject:** Study of the soft dipole modes in  $^{140}\text{Ce}$  via inelastic scattering of  $^{17}\text{O}$   
**Journal:** Phys. Scr. 89, 054016 (2014)
- September** **Authors:** V. Vandone et al.  
**2013** **Subject:** Global properties of K hindrance probed by the  $\gamma$  decay of the warm rotating  $^{174}\text{W}$  nucleus  
**Journal:** Phys. Rev. C 88, 034312 (2013)
- March** **Authors:** F. C. L. Crespi et al.  
**2013** **Subject:** Response of AGATA segmented HPGe detectors to gamma rays up to 15.1 MeV  
**Journal:** Nucl. Instrum. Methods A 705, 47 (2013)
- June** **Authors:** S. Bottoni et al.  
**2012** **Subject:** Reaction dynamics and nuclear structure of moderately neutron-rich Ne isotopes by heavy-ion reactions  
**Journal:** Phys. Rev. C 85, 064621 (2012)
- April** **Authors:** D. Montanari et al.  
**2012** **Subject:**  $\gamma$  spectroscopy of calcium nuclei around doubly magic  $^{48}\text{Ca}$  using heavy-ion transfer reactions  
**Journal:** Phys. Rev. C 85, 044301 (2012)
- November** **Authors:** D. Montanari et al.  
**2011** **Subject:** Elastic, inelastic, and one-nucleon transfer processes in  $^{48}\text{Ca} + ^{64}\text{Ni}$   
**Journal:** Phys. Rev. C 84, 054613 (2011)

## Publications in peer-reviewed conference proceedings

Total number of peer-reviewed conference proceedings: **53**

- September** **Authors:** S. Bottoni et al.  
**2023** **Subject:** Lifetime measurements in  $^{131}\text{Sb}$  at LOHENGRIN  
**Journal:** J. Phys.: Conf. Ser. 2586, 012089 (2023)

- September** **Authors:** D. Brugnara et al.  
**2023** **Subject:** The  $^{46}\text{Ar}(^3\text{He},d)^{47}\text{K}$  direct reaction as a probe of the  $^{46}\text{Ar}$  proton wavefunction  
**Journal:** J. Phys.: Conf. Ser. 2586, 012073 (2023)
- September** **Authors:** J. Pellumaj et al.  
**2023** **Subject:** Investigating the intruder states of  $^{83}\text{Se}$  via lifetime measurements  
**Journal:** J. Phys.: Conf. Ser. 2586, 012052 (2023)
- July** **Authors:** G. Corbari, S. Bottoni et al.  
**2022** **Subject:** Searching for the  $\gamma$  decay from the near-neutron threshold  $2^+$  state in  $^{14}\text{C}$ : A probe of collectivization phenomena in light nuclei  
**Journal:** Nuovo Cimento C 46, 90 (2023)
- Mar** **Authors:** S. Bottoni et al.  
**2023** **Subject:** Core-proton coupled nature of the  $11/2^+$  state in  $^{131}\text{Sb}$  probed by lifetime measurements  
**Journal:** J. Phys.: Conf. Ser. 2453, 012028 (2023)
- Mar** **Authors:** G. Corbari, S. Bottoni et al.  
**2023** **Subject:**  $\gamma$  decay from the near-neutron-threshold  $2^+$  state in  $^{14}\text{C}$ : a probe of collectivization phenomena in light nuclei  
**Journal:** Acta Phys. Pol. B Proc. Suppl. 16, 4-A33 (2023)
- June** **Authors:** S. Capra et al.  
**2022** **Subject:** GALTRACE: A highly segmented silicon detector array for charged particle spectroscopy and discrimination  
**Journal:** Nuovo Cimento C 45, 98 (2022)
- June** **Authors:** M. Polettini et al.  
**2022** **Subject:** Decay studies in the  $A \approx 225$  Po-Fr region from the DESPEC campaign at GSI in 2021  
**Journal:** Nuovo Cimento C 45, 125 (2022)
- January** **Authors:** C. Porzio et al.  
**2021** **Subject:** High-precision spectroscopy of  $^{65}\text{Ni}$  via neutron capture  
**Journal:** Nuovo Cimento C 44, 69 (2021)
- January** **Authors:** E. R. Gamba et al.  
**2021** **Subject:** Lifetime measurements of the  $2_1^+$ ,  $4_1^+$  and  $6_1^+$  states in  $^{114}\text{Pd}$   
**Journal:** Nuovo Cimento C 44, 47 (2021)
- January** **Authors:** S. Ziliani et al.  
**2021** **Subject:** Lifetime analysis of short-lived states in  $^{17}\text{N}$   
**Journal:** Nuovo Cimento C 44, 84 (2021)
- December** **Authors:** G. Montagnoli et al.  
**2020** **Subject:** Study of fusion hindrance in the system  $^{12}\text{C}+^{24}\text{Mg}$   
**Journal:** Jour. Phys. Conf. Ser. 1643, 012098 (2020)
- December** **Authors:** R. L. Canavan et al.  
**2020** **Subject:** Reaction Channel selection techniques and  $\gamma$  -  $\gamma$  fast-timing spectroscopy using the  $\nu$ -Ball Spectrometer  
**Journal:** Jour. Phys. Conf. Ser. 1643, 012117 (2020)
- January** **Authors:** N. Cieplicka et al.  
**2020** **Subject:** Decay of the “Stretched” M4 Resonance in  $^{13}\text{C}$   
**Journal:** Acta Phys. Pol. B Proc. Suppl. 13, 389 (2020)
- January** **Authors:** M. Ciemala et al.  
**2020** **Subject:** Short-range lifetime measurements for deep-inelastic reaction products: The  $^{19}\text{O}$  test case  
**Journal:** Acta Phys. Pol. B 51, 669 (2020)

- January** **Authors:** S. Ziliani et al.  
**2020** **Subject:** Spectroscopy of neutron-rich nitrogen isotopes with Agata+Paris+Vamos  
**Journal:** Acta Phys. Pol. B 51, 709 (2020)
- January** **Authors:** E. Adamska et al.  
**2020** **Subject:**  $\gamma$ -ray spectroscopy of  $^{85}\text{Se}$  produced in  $^{232}\text{Th}$  fission  
**Journal:** Acta Phys. Pol. B 51, 843 (2020)
- March** **Authors:** S. Bottoni et al.  
**2019** **Subject:** Investigating core excitations in the  $^{131}\text{Sn}$  one-valence-hole nucleus  
**Journal:** Acta Phys. Pol. B 50, 285 (2019)
- March** **Authors:** M. Rudigier et al.  
**2019** **Subject:** Isomer spectroscopy and sub-nanosecond half-live determination in  $^{178}\text{W}$  using the Nuball array  
**Journal:** Acta Phys. Pol. B 50, 661 (2019)
- March** **Authors:** B. Wasilewska et al.  
**2019** **Subject:** Testing of the brink-axel hypothesis with the Hector+Paris+Kratta set-up  
**Journal:** Acta Phys. Pol. B 50, 169 (2019)
- March** **Authors:** S. Ziliani et al.  
**2019** **Subject:** Spectroscopy of neutron-rich C, O, N and F isotopes with the Agata+Paris+Vamos setup at Ganil  
**Journal:** Acta Phys. Pol. B 50, 625 (2019)
- March** **Authors:** M. Ciemala et al.  
**2019** **Subject:** Determination of lifetimes of excited states in neutron-rich  $^{20}\text{O}$  isotope from experiment with the Agata+Paris+Vamos setup  
**Journal:** Acta Phys. Pol. B 50, 615 (2019)
- March** **Authors:** N. Jovancevic et al.  
**2019** **Subject:** Spectroscopy of neutron induced reactions with the  $\nu$ -ball spectrometer  
**Journal:** Acta Phys. Pol. B 50, 297 (2019)
- November** **Authors:** S. Bottoni et al.  
**2018** **Subject:**  $(n,\gamma)$  reactions on rare Ca isotopes: Valence-hole - Core excitation couplings in  $^{47}\text{Ca}$   
**Journal:** EPJ Web of Conference 193, 05001 (2018)
- November** **Authors:** N. Cieplicka-Orynczak et al.  
**2018** **Subject:** The  $\gamma$ -ray spectroscopy studies of low-spin structures in  $^{210}\text{Bi}$  and  $^{206}\text{Tl}$  using cold neutron capture reactions  
**Journal:** EPJ Web of Conference 193, 05007 (2018)
- November** **Authors:** E. R. Gamba et al.  
**2018** **Subject:** Fast-timing measurements in neutron-rich odd-mass zirconium isotopes using  $\text{LaBr}_3:\text{Ce}$  detectors coupled with Gammasphere  
**Journal:** EPJ Web of Conference 193, 05004 (2018)
- March** **Authors:** N. Cieplicka-Orynczak et al.  
**2018** **Subject:** The low-spin structure of  $^{206}\text{Tl}$  studied by  $\gamma$ -ray spectroscopy from thermal neutron capture reaction  
**Journal:** Acta Phys. Pol. B 49, 561 (2018)
- March** **Authors:** E. R. Gamba et al.  
**2018** **Subject:** Fast-Timing measurements in  $^{100}\text{Zr}$  using  $\text{LaBr}_3(\text{Ce})$  detectors coupled with gammasphere  
**Journal:** Acta Phys. Pol. B 49, 555 (2018)

- January** **Authors:** S. Courtin et al.  
**2017** **Subject:** Cross section measurements in the  $^{12}\text{C}+^{12}\text{C}$  system  
**Journal:** EPJ Web of Conferences 165, 01015 (2017)
- November** **Authors:** F. Galtarossa et al.  
**2017** **Subject:** Fusion hindrance for the positive Q-value system  $^{12}\text{C}+^{30}\text{Si}$   
**Journal:** EPJ Web of Conferences 163, 00019 (2017)
- November** **Authors:** S. Courtin et al.  
**2017** **Subject:** How well do we understand the reaction rate of C burning?  
**Journal:** EPJ Web of Conferences 163, 00011 (2017)
- September** **Authors:** N. Cieplicka-Orynczak et al.  
**2017** **Subject:** Reduction in the uncertainty of the neutron-capture cross section of  $^{210}\text{Bi}$ : Impact of a precise multipolarity measurement of the  $2^- \rightarrow 1^-$  main ground-state transition  
**Journal:** EPJ Web of Conferences 146, 10011 (2017)
- March** **Authors:** L. Iskra et al.  
**2017** **Subject:** Yrast structure above the 9.6 s  $8^+$  isomer in  $^{96}\text{Y}$  isotope  
**Journal:** Acta Phys. Pol. B 48, 581 (2017)
- March** **Authors:** N. Cieplicka-Orynczak et al.  
**2017** **Subject:** Study of  $^{41}\text{Ca}$  via cold neutron capture  
**Journal:** Acta Phys. Pol. B 48, 577 (2017)
- March** **Authors:** G. Bocchi et al.  
**2017** **Subject:** Interplay between particle and core excitations in  $^{133}\text{Sb}$   
**Journal:** Acta Phys. Pol. B 48, 595 (2017)
- March** **Authors:** M. Rudigier et al.  
**2017** **Subject:** Fast timing measurements using an  $\text{LaBr}_3(\text{Ce})$  scintillator detector array coupled with Gammasphere  
**Journal:** Acta Phys. Pol. B 48, 351 (2017)
- September** **Authors:** A. J. Mitchell et al.  
**2016** **Subject:** Recent advances in  $\beta$ -decay spectroscopy at CARIBU  
**Journal:** EPJ Web of Conferences 123, 04006 (2016)
- May** **Authors:** M. Rocchini et al.  
**2016** **Subject:** G-factor measurements of isomeric states in  $^{174}\text{W}$   
**Journal:** EPJ Web of Conferences 117, 04007 (2016)
- March** **Authors:** M. Krzysiek et al.  
**2016** **Subject:** Gamma decay of the possible 1-two-phonon state in  $^{140}\text{Ce}$  excited via inelastic scattering of  $^{17}\text{O}$   
**Journal:** Acta Phys. Pol. B 47, 859 (2016)
- October** **Authors:** N. Cieplicka-Orynczak et al.  
**2015** **Subject:** Excitations of one-valence-proton, one-valence-neutron nucleus  $^{210}\text{Bi}$  from cold-neutron capture  
**Journal:** AIP Conf. Proceedings 1681, 060011 (2015)
- May** **Authors:** J. Jolie et al.  
**2015** **Subject:** The  $(n,\gamma)$  campaigns at EXILL  
**Journal:** EPJ Web of Conferences 93, 01014 (2015)
- March** **Authors:** G. Bocchi et al.  
**2015** **Subject:** Study of low-spin states in Ca isotopes via neutron capture reactions  
**Journal:** Acta Phys. Pol. B 46, 647 (2015)

- March** **Authors:** S. Leoni et al.  
**2015** **Subject:** Particle-core couplings close to neutron-rich doubly magic nuclei  
**Journal:** Acta Phys. Pol. B 46, 637 (2015)
- March** **Authors:** S. Bottoni et al.  
**2014** **Subject:** Reaction dynamics and nuclear structure of moderately neutron-rich Ne isotopes by heavy ion reactions  
**Journal:** EPJ Web of Conferences 66, 03012 (2014)
- March** **Authors:** G. Bocchi et al.  
**2014** **Subject:** Search for particle-vibration coupling in  $^{65}\text{Cu}$   
**Journal:** EPJ Web of Conferences 66, 02011 (2014)
- March** **Authors:** F. C. L. Crespi et al.  
**2014** **Subject:** Study of the  $\gamma$  decay of high-lying states in  $^{208}\text{Pb}$  via inelastic scattering of  $^{17}\text{O}$  ions  
**Journal:** EPJ Web of Conferences 66, 02023 (2014)
- March** **Authors:** P. R. John et al.  
**2014** **Subject:** Study of shape transition in the neutron-rich Os isotopes  
**Journal:** EPJ Web of Conferences 66, 02057 (2014)
- February** **Authors:** S. Bottoni et al.  
**2014** **Subject:**  $\gamma$  spectroscopy of neutron-rich nuclei with  $A \approx 100$  produced by cluster transfer reactions at REX-ISOLDE  
**Journal:** Acta Phys. Pol B 45, 343 (2014)
- March** **Authors:** S. Bottoni et al.  
**2013** **Subject:** Reaction dynamics and gamma spectroscopy of Ne isotopes by the heavy ion reaction  $^{22}\text{Ne} + ^{208}\text{Pb}$   
**Journal:** Acta Phys. Pol. B 44, 457 (2013)
- September** **Authors:** V, Vandone et al.  
**2012** **Subject:** Order-to-chaos transition in warm rotating  $^{174}\text{W}$  nuclei  
**Journal:** Proceedings of the International School of Physics "Enrico Fermi" 178, 427 (2012)
- February** **Authors:** S. Leoni et al.  
**2012** **Subject:** Complete  $\gamma$ -spectroscopy of n-rich nuclei around  $^{48}\text{Ca}$  with Multi-Nucleon Transfer reactions  
**Journal:** J. Phys.: Conf. Ser. 381, 012046 (2012)
- February** **Authors:** V. Vandone et al.  
**2012** **Subject:** Study of the Order-to-Chaos transition in  $^{174}\text{W}$  with the AGATA demonstrator  
**Journal:** J. Phys.: Conf. Ser. 366, 012045 (2012)
- October** **Authors:** F. C. L. Crespi et al.  
**2011** **Subject:** Response of AGATA segmented HPGe detectors to  $\gamma$  rays up to 15.1 MeV  
**Journal:** IEEE Nucl. Sci. Symp. Conf. Records, 6154591, 1147 (2011)