



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE \_5854\_\_\_\_\_

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di** \_\_\_Physics\_\_\_\_\_

Scientist- in - charge: \_\_\_Zaccone Alessio\_\_\_\_\_

**Muhammad Rizwan Khan**

## CURRICULUM VITAE

### PERSONAL INFORMATION

Surname	Khan
Name	Muhammad Rizwan

### PRESENT OCCUPATION

Appointment	Structure
Post-Doc	Centre of Excellence ENSEMBLE <sup>3</sup> Sp. z o. o., Wolczynska Str. 133, 01-919, Warsaw, Poland

### EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	PhD	University of Chinese Academy of Sciences, Beijing, China	2022
Specialization	Theoretical Physics		
PhD			
Master	M.Phil Solid State Physics	University of Punjab, Lahore, Pakistan	2018
Degree of medical specialization			
Degree of European specialization			
Other			



## REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City

## FOREIGN LANGUAGES

Languages	level of knowledge
English	Excellent

## AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2022	Outstanding International Graduate Award by University of Chinese Academy of Sciences, China.
2021	Excellent International Student Award by University of Chinese Academy of Sciences, China.
2020	Directorship Excellent Student Award by Institute of Physics, Chinese Academy of Sciences, China.
2018	CAS-TWAS President Fellowship for Ph.D at IOP, University of Chinese Academy of Sciences, China.
2017	Best Oral Presentation Award at 15th international Symposium on Advanced Materials held at National Centre for Physics (NCP), Pakistan, OCT, 2017.

## TRAINING OR RESEARCH ACTIVITY

International Workshop on Simulation and Modelling, organized by Allama Iqbal Open University, Islamabad, Pakistan, from 9 -12 December 2016.
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## PROJECT ACTIVITY

Year	Project
2023	SONATINA-7 call by National Science Centre, Poland on topic : Gapped metals as a new type of quantum materials : design of high-performance thermoelectric and new topological materials.

## PATENTS

Patent

## CONGRESSES AND SEMINARS

Date	Title	Place
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2023	<b>Poster Presentation</b> at European Materials Society Research Society Spring meeting Title: Fermi Level Instability as a Way to Tailor Properties of $\text{La}_3\text{Te}_4$	Strasbourg, France
2023	<b>Poster Presentation</b> at International Conference on Crystal Growth and Epitaxy, 2023. Title: Spontaneous off-stoichiometry as the knob to control dielectric properties of gapped metals.	Naples Italy
2017	<b>Oral talk</b> at International Conference on Solid State Physics ICSSP'17, at Center of Excellence in Solid State Physics Title : Investigations of $\text{XMgGa}$ ( $X = \text{Li}, \text{Na}$ ) Half Heusler Compounds for Thermo-elastic and Vibrational Properties.	University of the Punjab, Lahore, Pakistan,
2017	<b>Oral talk</b> at 15th International Symposium on Advanced Materials. Title : Lattice dynamics of $\text{Ru}_2\text{FeX}$ ( $X = \text{Si}, \text{Ge}$ ) full Heusler Alloys	National Centre for Physics (NCP), Islamabad, Pakistan
2015	International Conference on Solid State Physics ICSSP'15, at Center of Excellence in Solid State Physics	University of the Punjab, Lahore, Pakistan

## PUBLICATIONS

Books
[title, place, publishing house, year ...]
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[title, place, publishing house, year ...]

Articles in reviews
1. M. Boström*, <b>Muhammad Rizwan Khan*</b> , Harshan Reddy Gopidi, I. Brevik, Y. Li, Clas Persson, and Oleksandr I. Malyi*, A knob to tune the Casimir-Lifshitz force with gapped metals, (Accepted with Revision in Phys. Rev. B), DOI : <a href="https://arxiv.org/pdf/2307.16181.pdf">arxiv.org/pdf/2307.16181.pdf</a> . <b>*corresponding author</b>
2. Lovelesh, Harshan Reddy Gopidi, <b>Muhammad Rizwan Khan</b> , and Oleksandr I. Malyi, Noble gas functional defect with unusual relaxation pattern in solids, (Accepted with Revision J. Phys. Chem. Lett.). <a href="https://arxiv.org/abs/2306.12252">https://arxiv.org/abs/2306.12252</a>
3. <b>Muhammad Rizwan Khan</b> , Harshan Reddy Gopidi, and Oleksandr I. Malyi, Optical Properties and Electronic Structures of Intrinsic Gapped Metals : Inverse Materials Design Principles for Transparent Conductors, Appl. Phys. Lett. <b>23</b> , 061101 (2023). DOI : <a href="https://doi.org/10.1063/5.0153382">10.1063/5.0153382</a>
4. <b>Muhammad Rizwan Khan</b> , Harshan Reddy Gopidi, Hamid Reza Darabian, Dorota A. Pawlak and Oleksandr I. Malyi, Spontaneous off-stoichiometry as the knob to control dielectric properties of gapped metals, Phys. Chem. Chem. Phys., <b>25</b> , 20287-20294 (2023). DOI : <a href="https://doi.org/10.1039/D3CP01100C">10.1039/D3CP01100C</a> <b>*This article is a part of the themed collection by PCCP for : 2023 PCCP HOT Articles</b>



<p>5. <b>Muhammad Rizwan Khan</b>, Harshan Reddy Gopidi, Mateusz Wlazlo and Oleksandr I. Malyi, Fermi Level Instability as a Way to Tailor Properties of <math>\text{La}_3\text{Te}_4</math>, J. Phys. Chem. Lett. <b>14</b>, 1962-1967 (2023). DOI : <a href="https://doi.org/10.1021/acs.jpcclett.2c03701">10.1021/acs.jpcclett.2c03701</a>.</p>
<p>6. <b>Muhammad Rizwan Khan</b>, Kun Bu, Jian Tao Wang and Changfeng Chen, Topological nodal surface semimetal states in <math>\text{Sr}_5\text{X}_3</math> (X = As, Sb, Bi) compounds Phys. Rev. B <b>105</b>, 245152 (2022). DOI : <a href="https://doi.org/10.1103/PhysRevB.105.245152">10.1103/PhysRevB.105.245152</a>.</p>
<p>7. <b>Muhammad Rizwan Khan</b>, Kun Bu, Jian Tao Wang, Topological nodal line semimetal in an all-sp<sup>2</sup> bonded monoclinic carbon New J. Phys. <b>24</b>, 043007 (2022). DOI : <a href="https://doi.org/10.1088/1367-2630/ac5e16">10.1088/1367-2630/ac5e16</a>.</p>
<p>8. <b>Muhammad Rizwan Khan</b>, Kun Bu, Jian Tao Wang, Six- or four-fold band degenerations in <math>\text{CoAs}_3</math>, <math>\text{RhAs}_3</math> and <math>\text{RhSb}_3</math> topological semimetals Phys. Chem. Chem. Phys. <b>23</b>, 25944-25950 (2021). DOI:<a href="https://doi.org/10.1039/D1CP02310A">10.1039/D1CP02310A</a>.</p>
<p>9. <b>Muhammad Rizwan Khan</b>, Kun Bu, Jan-Shuai Chai, Jian Tao Wang, Novel electronic properties of monoclinic <math>\text{MP}_4</math> (M = Cr, Mo, W) compounds with or without topological nodal line, Sci. Rep. <b>10</b>, 11502 (2020). DOI:<a href="https://doi.org/10.1038/s41598-020-68349-9">10.1038/s41598-020-68349-9</a>.</p>
<p>10. <b>Muhammad Rizwan Khan</b>, Kun Bu, Jian Tao Wang, Structural and electronic properties of <math>\text{XP}_4</math> (X = Ru, Os) compounds Solid State Commun. <b>326</b>, 114173 (2021). DOI:<a href="https://doi.org/10.1016/j.ssc.2020.114173">10.1016/j.ssc.2020.114173</a>.</p>
<p>11. <b>Muhammad Rizwan</b>, Afaq Ahamd, and Aneez Aftakhar, Lattice dynamics of <math>\text{Ru}_2\text{FeX}</math> (X = Si, Ge) full Heusler Alloys, Physica B <b>537</b>, 225-227 (2018). DOI:<a href="https://doi.org/10.1016/j.physb.2018.01.010">10.1016/j.physb.2018.01.010</a>.</p>
<p>12. Afaq Ahmad, <b>Muhammad Rizwan</b>, and Abu. Bakar, Computational Investigations of <math>\text{XMgGa}</math> (X = Li, Na) Half Heusler Compounds for Thermo-elastic and Vibrational Properties, Physica B <b>54</b>, 102-106 (2019). DOI:<a href="https://doi.org/10.1016/j.physb.2018.11.013">10.1016/j.physb.2018.11.013</a>.</p>
<p>13. Afaq Ahamd, Abu Bakar, <b>Muhammad Rizwan</b>, et al, Study of thermo-elastic and lattice dynamics properties of half-Heusler compounds <math>\text{XMgAl}</math> (X = Li, Na) by computational investigations, Mod. Phys. Lett. B <b>33</b>, 1950093 (2019). DOI:<a href="https://doi.org/10.1142/S0217984919500933">10.1142/S0217984919500933</a></p>
<p>14. Aneez Aftakhar, Afaq Ahamd, Iftikhar Ahamd, and <b>Muhammad Rizwan</b>, DFT study on thermo-elastic properties of <math>\text{Ru}_2\text{FeZ}</math> (Z= Si, Ge, Sn) Heusler alloys, Int. J. Mod. Phys. B <b>31</b>, 1850045 (2017). DOI : <a href="https://doi.org/10.1142/S0217979218500455">10.1142/S0217979218500455</a>.</p>
<p>15. Afaq Ahamd, Aysha Asif, Abu Bakar, and <b>Muhammad Rizwan</b>, DFT study of <math>\text{CuCoMnX}</math> (X = Si, Sn, Sb) quaternary Heusler alloys for phonon spectra, Mod. Phys. Lett. B <b>33</b>, 1950155 (2019). DOI:<a href="https://doi.org/10.1142/S0217984919501550">10.1142/S0217984919501550</a></p>

Congress proceedings
[title, structure, place, year]
[title, structure, place, year]
[title, structure, place, year]

## OTHER INFORMATION


Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

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Place and date: \_\_\_\_\_Warsaw\_\_\_\_\_, \_\_\_\_\_30-08-2023\_\_\_\_\_