



**AL MAGNIFICO RETTORE
DELL'UNIVERSITA' DEGLI STUDI DI MILANO**

COD. ID: 5532

Il sottoscritto chiede di essere ammesso a partecipare alla selezione pubblica, per titoli ed esami, per il conferimento di un assegno di ricerca presso il Dipartimento di **Department of Physics "A. Pontremoli"**, **University of Milan**

Responsabile scientifico: Prof. Alessio Zaccone

[Anoop Mutneja]

CURRICULUM VITAE

INFORMAZIONI PERSONALI

Cognome	Mutneja
Nome	Anoop

OCCUPAZIONE ATTUALE

Incarico	Struttura
2016-2023	Integrated PhD programme of the Tata Institute of Fundamental Research-Hyderabad, India

ISTRUZIONE E FORMAZIONE

Titolo	Corso di studi	Università	anno conseguimento titolo
Degree	B.Sc.	Panjab University Chandigarh, India	2016
Int. M.Sc-Ph.D	M.Sc + Ph.D	TIFR Hyderabad	2023



LINGUE STRANIERE CONOSCIUTE

lingue	livello di conoscenza
English	Professional, Fluent
Hindi	Fluent
Punjabi	Fluent

PREMI, RICONOSCIMENTI E BORSE DI STUDIO

anno	Descrizione premio
2022-2023	Selected as a Participant in the Global Young Scientists Summit (GYSS) 2023.
2022	Received best poster award in In-House Symposium- TIFR-Hyderabad
2016	Qualified Council of Scientific and Industrial Research (CSIR) NET JRF 2016 with Rank 115
2016	Qualified Joint Entrance Screening Test (JEST) 2016 with Rank 29
2016	Qualified Joint Admission test for Masters (JAM) 2016 with Rank 40

ATTIVITÀ DI FORMAZIONE O DI RICERCA

In my PhD. I have done molecular dynamics simulations for various systems. I developed MD code to simulate rod dynamics in two and three dimensions. This system with rods and the MD of the normal system of spheres was then parallelised using MPI. I worked on and developed the shearing protocol and code for the system with rods, both the serial and parallel versions.

In the first part of my PhD, I worked on obtaining the growing length scales in supercooled systems using rods of different lengths. This work addresses the question of what to expect from the dynamics of probe particles while doing Single-Molecule experiments in supercooled liquids. We outlined the correct variables to look at while doing such experiments. The rotational First-Passage-Time or the relaxation times is observed to have hopping dynamics in glassy liquids. We were successfully able to link the same with the growing structural length scale in the system. Interestingly, the quantities required for such an analysis are not far-fetched for real experiments. One can also obtain similar information by studying the translational dynamics of the probe rods.

Then I started working on the effects of rod-like impurities on the yielding transition of amorphous solid. The yield point is shifted to a larger strain value with increasing the concentration of probe rods, and rotational degrees of freedom has a huge role to play in that. This work is done in collaboration with a senior of mine, Bhanu Prasad Bhowmik. We are on the verge of finishing the manuscript.

I am also currently working on various aspects of the dynamics of active supercooled systems.

ATTIVITÀ PROGETTUALE



Anno	Progetto

TITOLARITÀ DI BREVETTI

Brevetto

CONGRESSI, CONVEGNI E SEMINARI

Data	Titolo	Sede

PUBBLICAZIONI

Libri
[titolo, città, editore, anno...]
[titolo, città, editore, anno...]
[titolo, città, editore, anno...]

Articoli su riviste
Understanding slow and heterogeneous dynamics in model supercooled glass-forming liquids. Indrajit Tah, Anoop Mutneja, Smarajit Karmakar,* ACS omega 6 (11), 7229-7239 (2021)
Translational dynamics of a rod-like probe in supercooled liquids: an experimentally realizable method to study Stokes-Einstein breakdown, dynamic heterogeneity, and amorphous. Anoop Mutneja , Smarajit Karmakar,* Soft Matter 17 (23), 5738-5746 (2021)
Probing Dynamic Heterogeneity and Amorphous Order Using Rotational Dynamics of Rodlike Particles in Supercooled Liquids. Anoop Mutneja, Smarajit Karmakar,* Physical Review Applied 16 (3), 0340223 (2021).
Enhanced short time peak in four-point dynamic susceptibility in dense active glass-forming liquids. Shubhadeep Dey#, Anoop Mutneja,# Smarajit Karmakar,* Soft Matter 18 (38), 7309-7316 (2022). (#equal contribution)
A Novel Method to Probe the Pronounced Growth of Correlation Lengths in an Active Glass-forming Liquids using Elongated Probe. Anoop Mutneja, Smarajit Karmakar,* arXiv:2211.10064



Yielding transition of amorphous solids in the presence of rod shape impurities. Anoop Mutneja, Bhanu Prasad Bhowmik, Smarajit Karmakar,* Manuscript under preparation

Wavevector dependence of Stokes-Einstein breakdown in supercooled active systems. Anoop Mutneja, Smarajit Karmakar,* Manuscript under preparation

Atti di convegni

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ALTRE INFORMAZIONI

Skills:

Programming Languages: C, C++, Python, Fortran 90, Matlab.

Parallel Programming: OpenMP, MPI

Conferences and Workshops:

1. Disorder's Role in Glass Formation and Deformation, held during July, 2022 at Lorentz Center, Leiden, Netherlands.

2. Entropy, Information and Order in Soft Matter, ICTS, 2018

3. Bangalore School on Statistical Physics - X, 2019

Research visits:

Visited Prof. Jürgen Horbach, Institut für Theoretische Physik II - Soft Matter, **Heinrich-Heine-Universität**, Düsseldorf, Germany from 1st May to 26th July 2022 to develop the Hamiltonian system for active matter.

Teaching Assistant:

I have been a teaching assistant for three courses at my present institute.

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del DPR n. 445/2000.

Il presente curriculum, non contiene dati sensibili e dati giudiziari di cui all'art. 4, comma 1, lettere d) ed e) del D.Lgs. 30.6.2003 n. 196.

RICORDIAMO che i curricula **SARANNO RESI PUBBLICI sul sito di Ateneo** e pertanto si prega di non inserire dati sensibili e personali. Il presente modello è già pre-costruito per soddisfare la necessità di pubblicazione senza dati sensibili.

Si prega pertanto di **NON FIRMARE** il presente modello.

Luogo e data: Hyderabad, India, 13/12/2022.