St. Xavier's College, Simdega

Dhawaipani, Khijri, Simdega, Jharkhand-INDIA-835235

Faculty Profile

Name of teaching Staff	**:**	**Dr. Ashif Akram**
Gender	:	Male
Mobile Number	:	9967587910
Email ID	:	akram.a0@gmail.com
Name of Department	:	Department of Physics
Academic Designation	:	Assistant Professor
Adm. Designation	:	Member, RnD
Level of Teaching	:	Undergraduate/Postgraduate
Name of job location	:	Department of Physics
Academic Qualification	:	M.Sc., CSIR-NET-JRF, PhD

Education and Postdoctoral Experience:

1. Postdoctoral Fellow, Kansas State University, Manhattan, USA, 2022-25.
2. Institute Postdoctoral Fellow, IIT Bombay, Mumbai, 2021-22.
3. Ph.D. Physics, IIT Bombay, Mumbai, 2022.
4. CSIR-NET-JRF (Physics), 2014
5. M.Sc. Physics, IIT Bombay, Mumbai, 2013.
6. B.Sc. (Hons.) Physics, Presidency College, Kolkata (under CU), 2011.

Research Papers Published:

1) Sumit Kumar, **Sk Ashif Akram**, Angelina Ning, Jeremy D. Schmit and Ankur Jain, ***"Sequence encoded inter-molecular interaction dictates phase-separation within condensates",https://doi.org/10.1101/2025.10.02.680069 (2025)***

Accepted for publication, Nature Chemical Biology (July 2026).

2) **Sk Ashif Akram,** Aniruddha Chattaraj, Terry Salava, Jonathon Ditlev, Leslie M. Loew, Jeremy D. Schmit, ***"Biomolecular phase boundaries are described by a solubility product that accounts for variable stoichiometry and soluble oligomers",J. Am. Chem. Soc. 2025, 147, 49, 45471–45485, https://doi.org/10.1021/jacs.5c16034 (2025).***
Published in Journal of American Chemical Society (JACS, December 2025).

3) **Sk Ashif Akram,** Tyler Brown, Stephen Whitelam, Georg Meisl, Tuomas P.J. Knowles and Jeremy D. Schmit, ***"Competing addition processes give distinct growth regimes in the assembly of 1D filaments", Biophysical Journal, Volume 124, Issue 5, 778 - 788,https://doi.org/10.1016/j.bpj.2025.01.018 (2025).***
Published in Biophysical Journal (January 2025).

4) Arabinda Behera, Gaurav Kumar, **Sk Ashif Akram** and Anirban Sain,***"Deformation of membrane vesicles due to chiral surface proteins", Soft Matter, 2021,17, 7953-7962,https://doi.org/10.1039/D1SM00628B (2021).***
Published in Soft Matter, Royal Society of Chemistry (2021).

5) **Sk Ashif Akram,**Arabinda Behera, Prerna Sharma and Anirban Sain, ***"Chiral molecules on curved colloidal membranes", Soft Matter, 2020,16, 10310-10319,https://doi.org/10.1039/D0SM01276A (2020).***
Published in Soft Matter (RSC) (2020).

6) **Sk Ashif Akram**, Gaurav Kumar and Anirban Sain, ***"Membrane budding driven by intra-cellular ESCRT-III filaments",arXiv:2112.12729 (2021).***
Submitted and under review, PRE.

Chapter(s) in Books:
Paper Presented in Seminar/Conference (National/International):

- **During PhD:**

1. Presented a talk in 'HEP Journal Club', Dept. of Physics, IIT Bombay in January 2016. The talk was based on the **works done by Suvrat Raju on Information Paradox**.

2. Presented a talk in ‘HEP Journal Club’, Dept. of Physics, IIT Bombay in November 2016. The talk was based on the works **"The firewall paradox and highly squeezed quantum fluctuation inside a black hole"**.
3. Presented a talk in ‘HEP Journal Club’, Dept. of Physics, IIT Bombay in November 2017. The talk was based on the works **"Quadrupolar power radiation by a binary system in de Sitter background"**.
4. Presented a talk in ‘HEP Journal Club’, Dept. of Physics, IIT Bombay on October 9, 2018. The talk was based on the works **"The mass of Sound"**.
5. Presented a talk in ‘Astro Journal Club’, Dept. of Physics, IIT Bombay on April 5, 2019. The talk was based on the works **"Solar corona & Alfven waves"**.
6. Presented a talk in ‘HEP Journal Club’, Dept. of Physics, IIT Bombay on September 6, 2019. The talk was based on **different ways to calculate hubble parameters**.
7. Symphy 2020, IIT Bombay: **“Nematics on Curved Colloidal Membranes”**

- **During Postdoc:**

1. April 7, 2023, CMS Seminar, Kansas State University: **“Chiral Molecules on Curved Colloidal Membranes”**
2. April 12, 2024, CMS Seminar, Kansas State University: **“Theory of Polymer Condensates”**
3. A series of **8 talks between May 14 and June 5, 2024** on the topic of **“Polymer Condensates”:**
   a) Jadavpur University, Jadavpur, Kolkata (Title: A minimalist model for bio-molecular condensates, Date: May 14, 2024, duration: 1 hour, host: Prof. SanatKarmakar, Department of Physics, Jadavpur University);

   b) Saha Institute of Nuclear Physics, Kolkata (Title: A minimalist model for bio-molecular condensates, Date: May 16, 2024, duration: 1 hour, host: Prof. Chandrima Das, Biophysics and Structural Genomic Division, Saha Institute of Nuclear Physics (SINP), Kolkata);

c) University of Calcutta, Kolkata (Title: A minimalist model for bio-molecular condensates, Date: May 16, 2024, duration: 1 hour, host: Prof. AnsumanLahiri, Department of Biophysics, Molecular Biology & Bioinformatics, University of Calcutta, Kolkata).

d) IISER Kolkata (Title: A minimalist model for bio-molecular condensates, Date: May 21, 2024, duration: 1 hour, host: Prof. Dipjyoti Das, Department of Physical Sciences (DPS), IISER Kolkata);

e) Presidency University, Kolkata (Title: A minimalist model for bio-molecular condensates, Date: June 3, 2024, duration: 1 hour, host: The Students' Academic Forum of the Dept. of Physics, Presidency University);

f) Bose Institute, Kolkata (Title: A minimalist model for bio-molecular condensates, Date: June 4, 2024, duration: 1 hour, host: Prof. Abhrajyoti Ghosh, Associate Professor & Ramanujan Fellow, Department of Biological Sciences, Bose Institute);

g) S.N. Bose Center for Basic Institutes, Kolkata (Title: A minimalist model for bio-molecular condensates, Date: June 4, 2024, duration: 1 hour, host: Prof. Jaydeb Chakrabarti, Senior Professor, S N Bose National Center for Basic Sciences (SNBNCBS), Kolkata);

h) IIT Kharagpur, Kharagpur, India (Title: A minimalist model for bio-molecular condensates, Date: June 5, 2024, duration: 1 hour, host: Prof. Pintu Patra, Department of Physics, IIT Kharagpur).

4. February 28, 2025, CMS Seminar, Kansas State University: **“Miscibility and Immiscibility in Polymer Condensates”**
5. November 22, 2025, CMMSSP 2025, Presidency University, Kolkata: **“Spacer mediated specificity in Polymer Condensates”,*Awarded the best oral presenter of the conference.***
6. April 29, 2026, **ECR (Early Career Researcher) seminar series,** organized by **TLM (theory of Living Matter) Network, University of Cambridge**. Title: **"Spacer-mediated specificity in polymer condensates"**

Poster Presentation:

- **During PhD:**

1. 7th Indian Statistical Physics Community Meeting , February 19-21, 2020, ICTS Bangalore: **"Chiral Molecules on Curved Colloidal Membranes"**
2. Complex Fluids, December 10-12, 2020, IIT Bombay: **"Nematics on Curved Colloidal Membranes"**
3. Complex Fluids, Virtual Conference, December 13-15, 2021: **"Membrane budding driven by intra-cellular ESCRT-III filaments"**

- **During Postdoc:**

4. ISMC 2024, July 29 - August 2, 2024, North Carolina Convention Center: "Competing addition processes give distinct growth regimes inthe assembly of 1D filaments"
5. SoPhyc 2024, October 22-25, 2024, IIT Bombay: **"Competing addition processes give distinct growth regimes in the assembly of 1D filaments"**
6. SoPhyc 2025, October 11-14, 2025, IIT Patna: **"Sequence-encoded interactions program internal condensate architecture"**
7. SMCB 2025, December 17-19, TIFR Hyderabad: **"Spacer mediated specificity in Polymer Condensates"**
8. IBS 2026, March 13-15, 2026, NEHU Shillong Campus, **"Spacer mediated specificity in Polymer Condensates"**

Seminars/Conferences Organized:

1. Convener, SymPhy-2015. (SymPhy is an in-house symposium of Department of Physics, IIT Bombay)
2. Hospitality and Transportation, SymPhy-2014.
3. Was 'Seminar Secretary', Research Scholars' Association of Physics (RSAP), 2013-2014, Dept. of Physics, IIT Bombay and General Secretary, Research Scholars' Association of Physics (RSAP), 2014-2015, Dept. of Physics, IIT Bombay.

4. Chief Organiser of the Successful Seminar, 'The Art of Technical Communication' by Dr. Asim Tewari, Assistant Professor, Mechanical Engg, IIT Bombay held on September 3rd, 2013.
5. Part of Organising Team,RSAS-2014. (Research Scholars and Alumni Symposium, IIT Bombay), was a member of both Technical and Hospitality Teams.
6. Was Transport and Hospitality 'Student Co-ordinator' and a participant, International Workshop on Frontiers of QCD, held on December 2-5, 2014 at IIT Bombay.
7. Department Co-ordinator, RSC (Research Scholars' Confluence)-2015, IIT Bombay.
8. Founder and co-ordinator, Theoretical Physics Journal Club, Dept. of Physics, IIT Bombay. Also delivered talks in Journal Club.
9. Overall Co-ordinator, 'Student Seminar Program' 2014-15, Dept. of Physics, IIT Bombay.
10. Logistic Co-ordinator, 'Make In India Hackathon', February 2016, IIT Bombay.
11. Sound and Video Co-ordinator, Foundations Day Program, March 10, 2016, IIT Bombay.
12. Volunteer for chaperoning guest speaker Prof. Krishendu Sengupta of IACS, Kolkata for the occasion of the diamond jubilee celebrations in our department (Powai Perspectives on Physics-2018) on the 12th and 13th october, 2018.
13. Early advisor, SymPhy-2019, IIT Bombay.

Books Edited:

Guest Lectures / Special Lectures Delivered:

Projects/Internships Supervised:

→I mentored Team LUMIERE (ID The 86) for ITSP 2019. The project was on 'Intelligent Street Light System'. The four people who worked under me were (bsahasriya@gmail.com, poco20102018@gmail.com, rohithjanjanam2001@gmail.com, nehajahnavi01@gmail.com).

→I mentored Devanshu Sharma (Undergraduate Student of NIT Surat, Gujarat), Summer Intern of 2019, Department of Physics, IIT Bombay. His topic was on geodesics in Schwarzschild & Kerr Metric. I again mentored him on his winter internship, **(December 2019 - January 2020)** on "Topics in Cosmology".

→I mentored Vijay V&AsawariKeskar, both undergraduate students of EP, IIT Bombay as part of Summer of Science 2019, organized by Math & Physics Club, IIT Bombay.

→ **Summer of Science 2020:**Mentored Gaurav Badre& Hemant Kumar on "Fundamentals of QFT", Mentored Neeraj Chandani on "Mathematical Biology" and Sanaa Sharma on "String Theory in Black Holes".

→ **Summer of Science 2021:** Mentored Rathindra Nath Das & Chinmay Talegaonkar on "Differential Geometry", Aaryan Gupta & Vipin Singh on "Financial Mathematics" and Faizal Aziz on "Special & General Relativity".

→ **2022-2025:**Mentored Terry Salva Jr. and Afreen (my juniors at Schmit Lab, KSU Physics) during their PhD research and Tyler during his undergraduate research.

→ **ABP Summer Research Internship:**Mentored Nihal Ibrahim PP between May 2025 and August 2025 on a project titled ***"Translocation of Polymers through Conical Pores".***

Nihal wrote a dissertation and successfully defended his thesis at the end of the program. The internship was conducted by Association of Bengali Professionals' Research Unit based in Kolkata, India.

Journal and Manuscript Review:

- Biophysical Journal, January-March 2026.