

# Exploring the Positronium Frontier *for* Precision Tests, New Physics & Entanglement

The goal of this workshop is to brainstorm the different elements needed to set up an end-to-end physics program using the positronium system. For such an endeavor to succeed, it is essential to plan together at an early stage with an interdisciplinary team of domain experts.

- The physics potential using a positronium system
- Existing positronium-based experimental programs
- Active materials, photodetectors (conventional and quantum)
- Front-end and backend electronics
- Utility of picosecond-level timing and synchronization
- Positronium source and beamline
- Simulation, triggering, and reconstruction

**February 12-14, 2026**  
TIFR, Mumbai

Organisers |  
Gobinda Majumder, TIFR, Mumbai  
Rajdeep Chatterjee, TIFR, Mumbai  
Rudrajyoti Palit, TIFR, Mumbai  
Sneha Sharma, IISER Pune  
Shilpi Jain, TIFR, Mumbai  
Tuhin S. Roy, TIFR, Mumbai  
Vandana Nair, TIFR, Mumbai



WEBSITE

Tata Institute of Fundamental Research

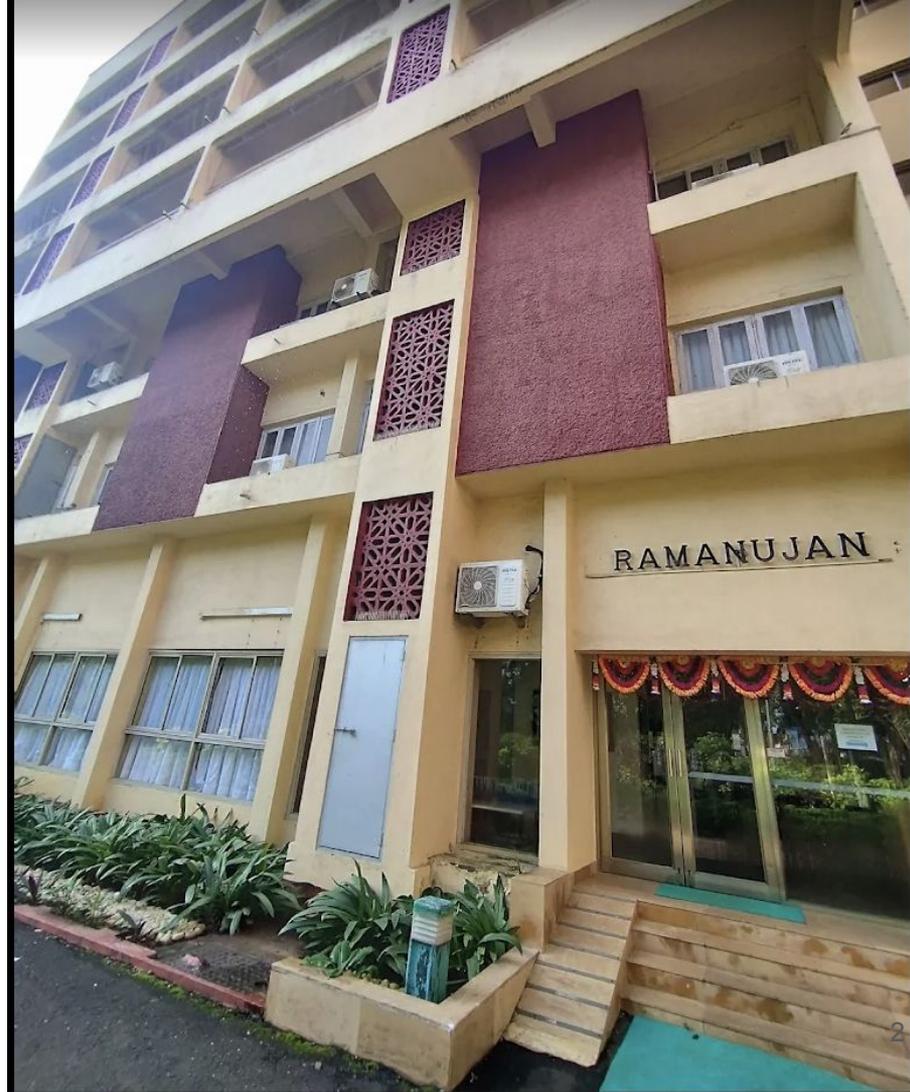
Hare Krishna Road, Colaba, Mumbai 400 001 (Mumbai)  
Tel.: [91] (22) 22792900 Email: soa@tifr.res.in

# Information about the Logistics

## ETPF2026

## Workshop Venue

All the talks will happen in this room: 1st floor, **Ramanujan Guest house**, TIFR housing complex



# Agenda of the workshop

- Link to the agenda:  
<https://scitalks.tifr.res.in/event/9197/timetable/#20260212>
- It is a 2.5 days workshop
- Day 1 (12th Feb): 3 sessions
- Day 2 (13th Feb): starts at 9:30 am and has 3 sessions
- Day 3 (14th Feb): Summary and closeout session starts at 10 am
- In between tea breaks: Tea will be served just outside this conference venue
- Lunch: In the dining area adjacent to the reception in this guest house

# Speaker instructions

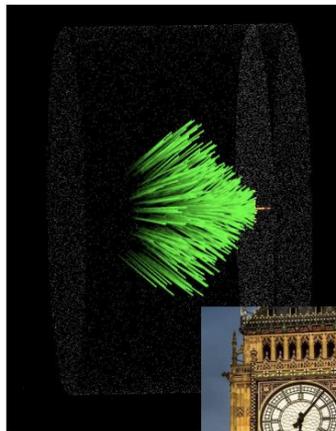
- All the talks are 25' + 5' discussions
- We have also kept some time after each session for a discussion
- All the speakers should have rights to upload on the agenda
- In case there are problems in the upload, please email the slides to
  - Rajdeep Chatterjee: [r.m.chatterjeejr@gmail.com](mailto:r.m.chatterjeejr@gmail.com)
  - Shilpi Jain: [shilpi.jain@cern.ch](mailto:shilpi.jain@cern.ch)

# ASET Colloquium on 13<sup>th</sup> Feb

Advances in Science, Engineering and Technology (ASET) Colloquium is scheduled on **13<sup>th</sup> February at 4 pm in AG66 by Prof. Roger Rusack (University of Minnesota) on “What time is it? Towards detectors with picosecond-level timing precision”**

## What Time is it?

**Towards detectors with picosecond-level timing precision**  
**Prof. Roger Rusack (University of Minnesota)**



It has long been recognized that precision timing in particle and nuclear physics opens new directions in physics. Going back to the earliest experiments in particle physics timing in detectors has been used to measure time-of-flight, for particle identification and for precision positions measurements. Forty years ago, the state-of-the-art was 250 picoseconds. Modern detectors with a resolution of 30 picoseconds are being built for the CERN High-Luminosity Large Hadron Collider To move from where we are now to an even more precise level of timing measurement there are many technological challenges including broadcasting a time signal. In my talk I shall review how time has been broadcast in the past, the current solutions and discuss ideas on how to achieve a timing precision in large detector systems around one picosecond.



*Prof Rusack has worked on the design, construction and exploitation of particle physics detectors at CERN and at Fermilab since he graduated from Imperial College. In his career he has designed detectors for fixed-target, collider and neutrino experiments. He has been an author on three particle first observation papers: the tau neutrino, the Higgs boson and the  $^1h_c^+$  meson. He is currently working on a measurement of the Higgs boson mass and investigating the limits of clock distribution.*

**13 February**  
**4 p.m.**

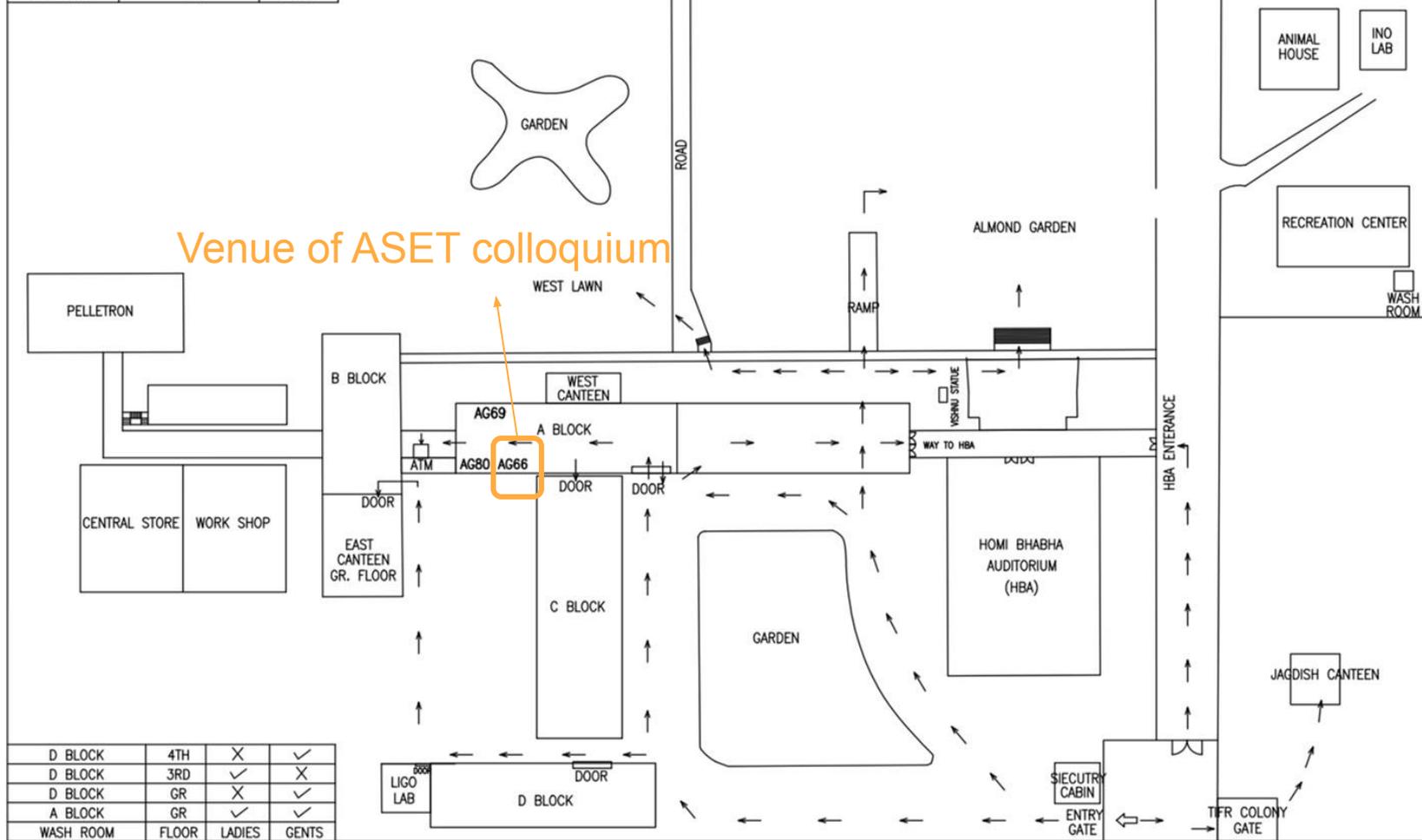
**TIFR Lecture Theatre AG66**

**YouTube Live:**

[https://youtu.be/yZdAiZXL\\_-w](https://youtu.be/yZdAiZXL_-w)



BUILDING NAME	FLOOR	ROOM NO
A BLOCK	GR	AG66
A BLOCK	GR.	AG69
A BLOCK	GR.	AG80
D BLOCK	4TH	D406



D BLOCK	4TH	X	✓
D BLOCK	3RD	✓	X
D BLOCK	GR	X	✓
A BLOCK	GR	✓	✓
WASH ROOM	FLOOR	LADIES	GENTS

## WiFi

- Connect to the **GuestHouse** network
- Password: etpf2026
- **eduroam** is also available.

# Contact information

- In case of any questions or problems, please contact the following
  - Tuhin Roy: [tsroy@gmail.com](mailto:tsroy@gmail.com)
  - Seema Sharma: [seema@iiserpune.ac.in](mailto:seema@iiserpune.ac.in)
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