

PriSM 11: Making Sense of Wave Phenomena: from the Mechanical to the Abstract

This workshop will explore how waves interact with each other that result in producing interesting patterns in the physical world. We will explore interference and reflection of sound waves with slinkies and build a machine that encodes the information in sound waves into laser light drawings. In an analogous manner we will analyse these patterns using mechanical drawing machines which superimpose damped oscillations in two dimensions. Moving further, we investigate the wave nature of light by passing laser light through two narrow slits, and drawing inferences from the interference fringes that arise, contrasting it with shadows. We model this phenomenon using long wave trains made from wax paper to develop an understanding of the physical process, and observe the effect of slit separation and wavelength on the fringe separation. We conclude by transposing this phenomenon to sound, walking around the room with a stereo speaker pair acting as coherent sources.

Facilitator

Kaushik Basu

University of California, Berkeley



Kaushik Basu enjoys the interplay of physics and mathematics, and tries to see it everywhere around him. His interests are in teaching and interpreting student ideas to design experiments. He is affiliated with the Academic Talent Development Program, University of California, Berkeley, where he teaches physics and mathematics, including international

students visiting UC Berkeley. He also mentors students interested in teaching, and he is a founding faculty member at Proof School. When doing neither of these, he embodies optimal fluid dynamics by swimming long distance butterfly in the open waters of the San Francisco Bay.

Eligibility

Students in class 8th and 9th standard students, or between 13-15 years. Participation is by invitation only. Register to apply. Contact outreach@icts.res.in for bulk registration.

19 June 2026 (Friday)

9:00 AM - 1:30 PM

ICTS-TIFR

Register here:



<https://icts.res.in/outreach/prism/prism11>

outreach@icts.res.in