Society of Physics Students presents:

PHYSICS ALUMNI SERIES SEMINAR

Seeing is believing: Zooming in on bacteriophages with cryo-electron microscopy

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The most abundant biological entities on Earth are bacteriophages, viruses that infect bacteria. Around the world, these natural predators are being deployed alongside antibiotics to fight dangerous drug-resistant superbugs. Phages can be viewed as biological nanoparticles with four conserved structural elements: a genome (1) that is packaged into a protein shell called a capsid (2), which connects to tail machinery (3) via a molecular motor known as the portal (4). These structural elements determine important factors like phage stability, bacterial host-range, particle immunogenicity, and more. Since bacteriophages are increasingly used as antimicrobial therapies, it is more important than ever to understand these structural determinants of phage function. In this talk I will guide you through several atomic-resolution bacteriophage structures that I solved experimentally with cryo-electron microscopy (cryo-EM). By presenting these structures alongside microbiological and immunological data, I will illustrate the power of "seeing" the phages in full detail. Insights from these data can drive engineering efforts to improve bacteriophages as therapeutics.

Tuesday, February 25th, 2025

11:30 am, SR 151

Pizza and Refreshments Provided