



AMERICAN
UNIVERSITY OF BEIRUT
CENTER FOR ADVANCED
MATHEMATICAL SCIENCES

ACTIVE HYDRODYNAMICS IN COMPLEX SYSTEMS

Collections of self-driven particles are called Active Matter. Creating this category is a way of incorporating living matter, and artificial systems that imitate it to varying degrees, into the extended condensed matter family. We know, of course, that active matter is different because its constituents are endowed with a steady supply of free energy that they convert into work. My lectures will present the principles underlying the dynamical description of active systems, with emphasis on the coarse-grained or “hydrodynamic” approach. I will discuss flocks on dry terrain and in fluid, more complex broken-symmetry states, chirality, and non-reciprocal interactions. I will also talk about some surprising experimental realizations of active matter.

FEBRUARY 14, 16 AND 17, 2023 | 2:30 PM

COLLEGE HALL, AUDITORIUM B1 AND ZOOM



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born Lucknow, India, 1957; education: High School -- The Modern School, New Delhi 1973; B S (high honors) University of Maryland 1977; PhD University of Chicago 1983. Career: Postdoc, U Penn 1983-86; on the faculty of the Dept of Physics, Indian Institute of Science, 1986-present; Professor since 2002 (2012-2016 on leave as Centre Director of the TIFR Centre for Interdisciplinary Sciences, Hyderabad). Current research interests: Nonequilibrium, soft-matter and biological physics; widely recognized for his research on active matter, a field he helped create. Selected Honors: elected Fellow of the Royal Society of London 2016; Infosys Prize for the Physical Sciences 2011, Shanti Swarup Bhatnagar Prize for the Physical Sciences 2000