Boulder School for Condensed Matter and Materials Physics

Hydrodynamics Across Scales

July 4-29, 2022

The dynamic properties of fluids – hydrodynamics – pose one of the most challenging subjects in physics. Central to life as we know it, fluids play important roles in nature at all length scales, from the atomic to the galactic. Recently, condensed matter physicists began to find surprising connections that span these scales. This summer school will be devoted to some of these new connections. Topics include quantum liquids, complex fluids (especially active matter), hydrodynamics in geophysical and astrophysical settings, and non-equilibrium statistical mechanics. Interdisciplinary cross-fertilizations of concepts and methodologies will be highlighted. Examples include: application of predator-prey models to turbulence in superfluid He-4 and fluid motion in the El Niño climate oscillation viewed as topological edge modes.

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Steve Tobias (Leeds)
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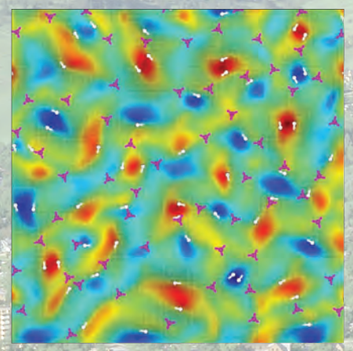

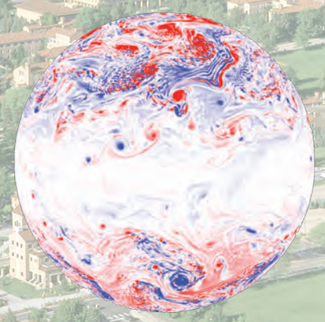

Upper left: Active turbulence and topological defects (credit: Kristian Thijssen);
Upper right: Starling murmuration (aka collective behavior of active particles);
Bottom: Idealized model of a planetary atmosphere with vorticity (left) and temperature (right).

Scientific Organizers:
Brad Marston (Brown)
Jeffrey B. Weiss (Boulder)
Peter Weichman (BAE Systems)
Julia M. Yeomans (Oxford)
Royce Zia (Virgina Tech)
Director: Leo Radzihovsky (Boulder)

The school will pay for most local expenses, and there are travel grants available for participants from U.S. universities. Students and postdocs interested in participating should submit an electronic application by the January 15 deadline. The application form, and detailed information regarding housing, travel and financial support are available at

http://boulderschool.yale.edu/

The Boulder School in Condensed Matter and Materials Physics provides expert training, not usually available within the traditional system of graduate and post-graduate education, for advanced graduate students and postdoctoral researchers working in condensed matter physics, materials science and related fields. The School is supported by the National Science Foundation, with additional funding provided by the University of Colorado, and meets annually during July in Boulder, Colorado.