



LUDWIG-
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MÜNCHEN

ARNOLD SOMMERFELD
CENTER FOR THEORETICAL PHYSICS



Arnold Sommerfeld Lecture Series

Professor Mehran Kardar

MIT, USA

Sommerfeld Theory Colloquium:

**Boundaries, inclusions and disorder
in active matter**

Active systems are driven out of equilibrium by exchanging energy and momentum with their environment. This endows them with anomalous mechanical properties which leads to rich phenomena when active fluids are in contact with boundaries, inclusions, or disordered potentials. Indeed, studies of the mechanical pressure of active fluids and of the dynamics of passive tracers have shown that active systems impact their environment in non-trivial ways, for example, by propelling and rotating anisotropic inclusions. Conversely, the long-ranged density and current modulations induced by localized obstacles show how the environment can have a far-reaching impact on active fluids. This is best exemplified by the propensity of bulk and boundary disorder to destroy bulk phase separation in active matter, showing active systems to be much more sensitive to their surroundings than passive ones.

Wednesday, January 14, 2026, 16:15 h, A348, Theresienstr. 37, LMU