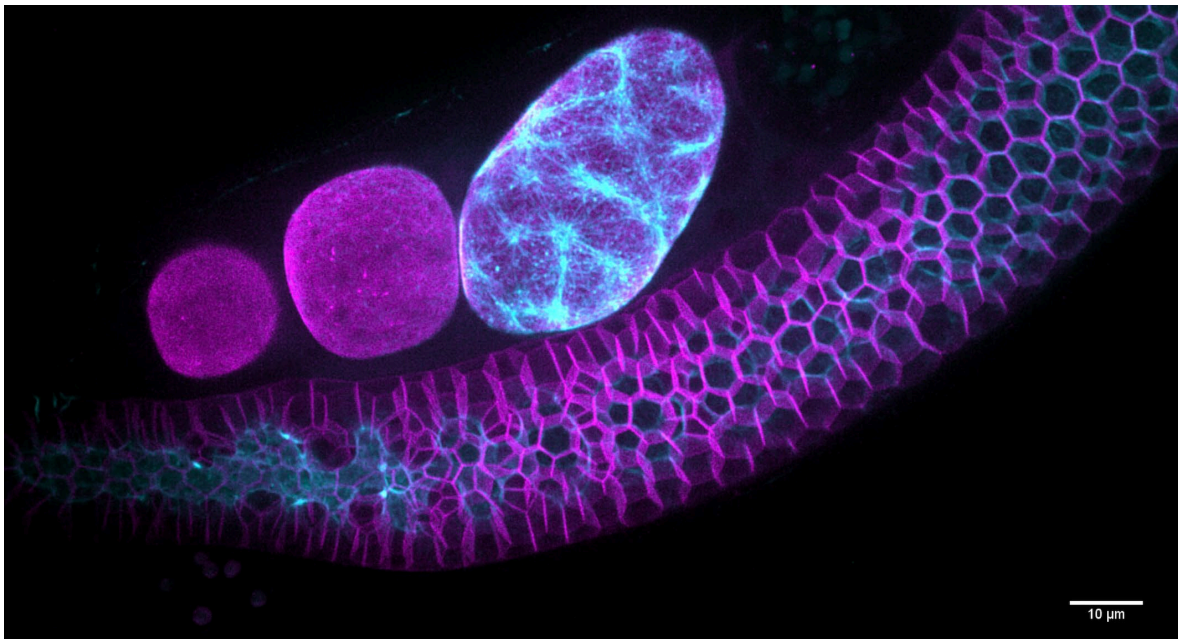
Physikalisches Institut
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg

PHYSIKALISCHES KOLLOQUIUM

AM 09. DEZEMBER 2024 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



"PHYSICS OF STRUCTURE FORMATION IN LIVING SYSTEMS"

STEPHAN GRILL

MPI DRESDEN

One of the most remarkable examples of self-organized structure formation is the development of a complex organism from a single fertilized egg. With the identification of many molecules that participate in this process, attention has now turned to capturing the physical principles that govern the emergence of biological form. Living systems are special in the sense that they structure themselves through processes that convert chemical energy into mechanical work. In this talk I will provide a brief introduction into 'Active Matter Physics', and discuss how the surface of a cell can generate active stresses that can drive its reshaping, or the reshaping of many cells that are collectively organized into a tissue. I will end with a report of our efforts of combining active matter theory with experiments in both worms and birds to understand symmetry breaking and pattern formation in early organismal development of active living systems.