

DY 63: Invited Talk

Time: Friday 9:30–10:00

Location: ZEU 160

Invited Talk

DY 63.1 Fri 9:30 ZEU 160

Coarse-grained descriptions of models of cell monolayers —
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Confluent cell monolayers exhibit a rich phenomenology and lie at the core of the field of dense active matter. From a physicist standpoint, cell monolayers may be thought of as two-dimensional dense assemblies of soft, elastic units, driven by different types of active forces or events like motility forces, contractility forces, or cellular division and apoptosis. They thus appear as paradigmatic strongly interact-

ing systems driven far from equilibrium, whose statistical description remains challenging. We discuss here several types of coarse-grained descriptions rooted in the cell-level dynamics. We first derive active continuum elastic descriptions that are well-suited to account for the effects of cell motility or of local contractile forces. Correlated large scale velocity fluctuations resulting from cell motility are favorably compared to experimental results on epithelial cell monolayers. Going beyond elastic effects, we also discuss how cell division and apoptosis modify, on longer time scales, the non-linear rheology of confluent cell monolayers by contributing to the mechanical noise that fluidizes the system.