Colloquium

Statistical Mechanics of Aging and Death

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Wednesday, March 5 ◆ 4 P.M.
Room 118 Nieuwland Science Hall

Refreshments @ 3:30 in 202 NSH

Nearly every complex organism experiences a life-long deterioration followed by a catastrophic collapse at the end. Furthermore, the statistical characteristics of this collapse are remarkably similar for a diverse range of organisms ranging from worms to mammals.

In this talk, I will first offer a bird's eye view of many-body physics and universality in strongly interacting disordered systems. Following that I will present a statistical-mechanical model for the evolution of specialization, show how a network of specialized cells lead the organism to a catastrophic collapse, and how the probability of collapse changes in time in a universal fashion. Finally, I will discuss the model's connections with experimental data, and how it can be used to provide insight into the manipulation and control of damage and failure in practical settings such as chemotherapy.

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