

# PHYSICAL MATHEMATICS SEMINAR

## **Boltzmann's Dog and Darwin's Finch: The statistical thermodynamics of self-replication and evolutionary adaptation**

**JEREMY ENGLAND**

Massachusetts Institute of Technology

**ABSTRACT:**

Living things operate according to well-known physical laws, yet it is challenging to discern specific, non-trivial consequences of these constraints for how an organism that is a product of evolution must behave. Part of the difficulty here is that life lives very far from thermal equilibrium, where many of our traditional theoretical tools fail us. However, recent developments in nonequilibrium statistical mechanics may help light a way forward. The goal of this talk will be to explain some of these developments, and show how they begin to offer a new perspective on the physics of self-replication, natural selection, and evolution..

**TUESDAY, FEBRUARY 24, 2015**

**2:30 PM**

**Building E18, Room 466A**

*Reception following in Building E17, Room 401A  
(Math Dept. Common Room)*

<http://math.mit.edu/pms/>