Satellite Session at CCS'15 http://www.ccs2015.org

Origin of Life: A Problem for Complexity Science

Sept 30, 2015, 8:30 am – 5:00 pm
Fiesta Ballroom II

Welcome: Life, Complexity and Physics

8:30 am Paul Davies. *Is Life A Cosmic Imperative?*

Part 1: Addressing Origin of Life as Problems for Complexity Science

9:00 am Paul Cassell. *Conceptual advances in origins of life research.*

9:30 am Michael Lachmann. *Maybe we should apply biology to physics, not the other way round?*

10:00 am Discussion on Part 1

Coffee Break (10:20 am – 10:40 am)

Part 2: Emergence of Living States from Evolution of Complexity

10:40 am Cole Mathis. *Emergence of Life As a First Order Phase Transition.*

11:00 am Eric Libby. *Aggregative group formation in the transition to multicellularity.*

11:30 am Alyssa Adams. *Implications of Open-Ended Evolution in a Deterministic Universe.*

11:50 am Discussion on Part 2

Lunch (12:10 pm – 1:10 pm)

Part 3: Evolution of Metabolic Networks: from Organism to Community

1:10 pm Jason Raymond. *A metabolism-centric view of the origin and diversification of life: from enzyme mechanisms to metabolic networks.*

1:40 pm Harrison Smith. *The Evolution of Metabolic Communities: Computational Models and Empirical Results.*

2:00 pm Discussion on Part 3

Coffee Break (2:20 pm – 2:40 pm)

Part 4: Computation and Information of Biological Systems

2:40 pm James Crutchfield. *Structural Thermodynamics of Agency.*

3:10 pm David Wolpert. *The free energy needed for computation: Implications for evolution.*

3:40 pm Hyunju Kim. *Bio from Bit: Information transfer distinguishes biological networks from random networks.*

4:00 pm Discussion on Part 4

Closing: Origin of Life as Possible Answers for Complexity Science

4:20 pm Sara Walker. *Towards a Mathematical Definition for the Transition from Non-Living to Living Matter.*