THE ELLIOTT W. MONTROLL LECTURES

University of Rochester
Department of Physics & Astronomy

Tuesday, February 20, 2018
4:00 pm, Bausch & Lomb Hall 109

Professor David Stevenson

Goldberger Professor of Planetary Science
Caltech

Physics & Astronomy Colloquium

Planetary Diversity

David J. Stevenson FRS is the Goldberger Professor of Planetary Science at the California Institute of Technology. He is world-renowned for his studies of the interior structure and magnetism of planets, and of the formation of planets and their lunar systems. He is also a decorated teacher at both graduate and undergraduate levels, and a frequent, highly-regarded, public ambassador of planetary science and exploration.

Prof. Stevenson's many honors include the Urey Prize of the American Astronomical Society; the Hess Medal of the American Geophysical Union; fellowship in both the Royal Society (UK) and the National Academy of Sciences (USA); and Caltech's Richard Feynman Teaching Prize.

Abstract: Our own solar system is only a small sampling of all possible planets. Exoplanet data, especially Kepler, is revealing the richness that exists. Even so, there are prejudices and misconceptions that can limit our appreciation of this diversity. These include: The notion that planets form cores with the heaviest material at the center, the notion that planets with Earthlike bulk composition will have solid surfaces (they may often have magma oceans even when at Earthlike effective temperatures), the notion that distant planets are cold, and the notion that planets orbit stars (there are probably plenty in interstellar space). I will talk about these issues and also put forward the philosophy that the grand astronomical traditions of categorization and grouping (as in the H-R diagram for example) is ill-suited to thinking about planets because planets are complicated whereas stars are simple. I will finish with some thoughts about what this means for life in the universe and what (if any) meaning we can give to the idea that Earth as "special".

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