



[Member Login](#)

[Print Page](#) [Email Page](#)

- ✧ [Home](#)
- ✧ [About the NAS](#)
- ✧ [Members](#)
- ✧ [Nomination and Election](#)
- ✧ [Awards](#)
- ✧ [Publications](#)
- ✧ [National Academies Studies](#)

ACTIVITIES

- ✧ [Koshland Science Museum](#)
- ✧ [Evolution Resources](#)
- ✧ [Sackler Colloquia](#)
- ✧ [Kavli Frontiers of Science](#)
 - ▷ [US Frontiers](#)
 - ▷ [Chinese-American Frontiers](#)
 - ▷ [German-American Frontiers](#)
 - ▷ [Indo-US Frontiers](#)
 - ▷ [Japanese-American Frontiers](#)
 - ▷ [UK-US Frontiers](#)
- ✧ [Keck Futures Initiative](#)
- ✧ [Exhibitions and Cultural Programs](#)
- ✧ [Distinctive Voices@The Beckman Center](#)
- ✧ [Committee on Human Rights](#)

Kavli Frontiers of Science Symposium Series

Eighteenth Annual US Kavli Frontiers of Science Symposium

National Academy of Sciences
November 2-4, 2006
Irvine, California

The Galactic Planetary Census

[-Presentation](#)

Gregory Laughlin, University of Santa Cruz

Please click on the above link to watch the presentation - both slides and audio. This presentation file is in [Flash](#) format, available free online.

The past decade has spawned a revolutionary new astronomical field: the study of alien planetary systems. Astronomers have now found nearly 200 extrasolar worlds, which populate planetary systems of astonishing diversity. Many of the first extrasolar planets to be detected were "Hot Jupiters" with orbital periods of only a few days, and eccentric giants, which are Jupiter-sized planets orbiting at distances similar to the Sun-Earth distance. We now also know of frigid worlds only a few times more massive than Earth orbiting red dwarf stars, and bizarre multiple-planet systems that have likely experienced histories rife with planetary close encounters, collisions, and ejections. Extrasolar planets are allowing us to understand how planetary systems form and evolve, and they are allowing us to place our own planetary system into the context of the galactic planetary census. In this talk, I'll explain the mechanisms (transits, radial velocity, microlensing) by which extrasolar planets are detected, and I will give an overall sense of the distribution of planetary properties. I'll argue that within the next ten years, we will know whether systems like our own are common or rare, and that we will almost certainly have specific examples of alien Earths – terrestrial planets orbiting at distances from their parent stars where liquid water, and life can exist.

References:

1. Extrasolar Planetary Systems, Gregory P. Laughlin, American Scientist, vol. 94 pp. 420- 429 (2006).

Related Links:

Watch Cutting Edge Science on the Web

US Frontiers (2005):

- Addiction: Proximate Mechanisms and Ultimate Causes
- Design Principles of the Brain
- Do Black Holes Destroy Information?
- Frontiers in Synthetic Chemistry and Biology
- Micro RNA / SiRNA
- Past Earths
- Robot Learning
- What's Driving Climate Change?

German-American Frontiers (2005):

- Complex Networks
- Endosymbiosis: Its Impact on the Evolution of Life
- Objects and Attention
- Protein Folding
- Seafloor Hydrothermal Systems
- Smart Antibiotics
- Ultrafast Phenomena with Light Pulses
- Why so many Species? The Origin of Biodiversity

Japanese-American Frontiers (2004):

- Algorithmic Approaches to Music Composition and Performance
- Carbon Nanotubes and Nanowires
- Cosmic Microwave

[Background / Age of the Universe](#)

[Mars](#)

[Social Networks](#)

[Stem Cells and Genetic Reprogramming](#)

[Synapse and Psychiatry](#)

[Ultra-High Precise Measurements](#)

[National Academy of Sciences](#)

[500 Fifth Street, NW
Washington, DC 20001](#)

[Terms of Use and Privacy Policy](#)

[Contact Us | Site Map](#)

[Printer Friendly Version](#)