GPI First Light!

Press-releases published on January 7th 2014

- **Gemini Observatory**

Gemini Planet Imager First Light!
http://www.gemini.edu/node/12113

- **LLNL**

Out of this world first light images emerge from Gemini Planet Imager
https://www.llnl.gov/news/newsreleases/2014/Jan/NR-14-01-01.html#.Usw_Z2RDtlM

- **STSCI**

STScI Astronomers Help Develop and Operate World's Most Powerful Planet Finder
http://hubblesite.org/newscenter/archive/releases/2014/08/full/

- **SETI Institute**

World's Most Powerful Planet Finder Turns its Eye to the Sky
http://www.seti.org/seti-institute/press-release/worlds-most-powerful-planet-finder-gemini-planet-imager-first-light-images

- **University of Montreal (in French)**

L'imageur d'exoplanètes le plus puissant au monde entame sa mission
http://www.nouvelles.umontreal.ca/recherche/sciences-technologies/20140107-limageur-dexoplanetes-le-plus-puissant-au-monde-entame-sa-mission.html

- **AMNH**

Museum-Built Device Helping Astronomers Search for Exoplanets
http://www.amnh.org/explore/news-blogs/research-posts/museum-built-device-helping-astronomers-search-for-exoplanets

- **ASU**

ASU professor, students part of Gemini Planet Imager team
https://asunews.asu.edu/20140107-gemini-planet-imager?utm_source=twitterfeed&utm_medium=twitter

- **Gemini Obs-SETI (in Spanish)**

El Espectrógrafo y Captador de Imágenes más poderoso del Mundo mira al cielo: la Primera Luz del Captador de Imágenes de Planetas de Gemini
http://www.seti.org/seti-institute/press-release/el-espectr%C3%B3grafo-y-captador-de-im%C3%A1genes-m%C3%A1s-poderoso-del-mundo-mira-al

- **UCSC**

World's most powerful exoplanet camera looks skyward
http://news.ucsc.edu/2014/01/planet-imager.html

- **JPL**

Powerful Planet Finder Turns Its Eye to the Sky
http://www.jpl.nasa.gov/news/news.php?release=2014-008

The **Gemini Planet Imager** is the next generation adaptive optics instrument being built for the Gemini Telescope. The goal is to image extrasolar planets orbiting nearby stars. In 2011, the GPI Exoplanet Survey team was selected to carry out an 890-hour survey campaign from 2014 to 2016 to search and characterize exoplanets around ~600 stars.

WHO: GPI has been built by a consortium of U.S. and Canadian institutions, funded by the Gemini Observatory, which is an international partnership comprising the U.S.A., U.K., Canada, Australia, Argentina, Brazil & Chile. The GPIES campaign is partially funded by NSF, NASA, the University of California and the Laboratory Directed Research and Development funding at the Lawrence LIvermore National Laboratory.

WHEN: After more than 5 years of development (preliminary design review in May 2007 and critical design review (CDR) in May 2008, delta CDR in March, 2009, procurement and fabrication phase until 2011), one year of integration at UCSC LAO in 2013, the instrument was ship ped to Chile in August 2013. The first light of the instrument was conducted in November 2013 and Science Operation will start in 2014.

WHERE: Initial deployment at Gemini South , a telescope with an 8-meter diameter mirror located on Cerro Pachon (Chilean Andes) at an altitude of 2,715 meters (9,000 feet). Later, GPI may also be used at the twin facility Gemini North, which is located on Mauna Kea, Hawaii.

WHY: GPI will detect DIRECTLY the light from an extrasolar planet to determine its mass and composition, with an ultimate goal of determining the nature of our own planetary system. Almost 1,000 extrasolar planets are known today, but mostly through indirect Doppler techniques that indicate the planet's mass and orbit or transit events that measure the planet's size and orbit. If we can directly pick out a planet from the star's glare, we can use spectroscopy to measure the planet's size, temperature, gravity, and even the composition of its atmosphere. By targeting many stars we will understand how common or unusual our own planetary system may be.

HOW: The GPI consortium built an advanced adaptive optics using silicon microchip deformable mirrors to remove atmospheric turbulence, and coronagraphic masks to block the diffracted light from the parent star.

WHAT: GPI will provide diffraction limited images between 0.9 and 2.4 microns. Bright natural guide stars (I<9.5 mag) are required for optimal performance of the GPI adaptive optics system. The system will be able to see objects ten million times fainter than their parent star at separations of 0.2-1 arcsecond in a 1-2 hour exposure. The science instrument will provide spectroscopy of any object observed. This allows us to detect warm planets (up to one billion years in age) through their infrared light. We can also measure the polarization of light to see faint disks of dust from other solar systems' comet and asteroid belts.

SO WHAT: GPI will produce the first comprehensive survey of giant exoplanets in the region where giant planets exist in our solar system - from 5 to 40 astronomical units radius. Dozens of these exoplanets will be bright enough for high signal-to-noise ratio spectroscopy, moving our studies of extrasolar planets into the realm of detailed astrophysics.