31st International Colloquium of the Institut d’Astrophysique de Paris
From Super-Earths to Brown Dwarfs: Who’s Who?
Paris: June 29th – July 3rd 2015

PROGRAM

Sunday, 28th June
17h30 – 20h00 Registrations and welcome drink (entrance hall), posters installation.

Monday, 29th June
8h30 – 9h05 Registrations (entrance hall) and posters installation.
9h05 – 9h10 Welcome address by Francis BERNARDEAU, IAP Head.
9h10 – 9h20 Meeting presentation and practicalities by Jean-Pierre MAILLARD, LOC Chair.

Session I: Solar System and exoplanets.

Morning Chair: Jack LISSAUER.

9h20 – 10h00 Jérémy LECONTE (Canadian Institute for Theoretical Astrophysics):
Who’s who: does living in the Solar System mislead us? (Invited review)

10h00 – 10h15 Radoslaw POLESKI (The Ohio State University Department of Astronomy):
Exoplanets sharing origin with Uranus.

10h15 – 10h30 Stéphane MAZEVET (LUTH, Observatoire de Paris):
Planetary structure revisited using ab-initio equations of states.

10h30 – 11h05 Coffee break (entrance hall) and posters display.

11h05 – 11h20 Pierre AUCLAIR-DESROTOUR (IMCCE, Observatoire de Paris):
Towards a new model of atmospheric tides: from Venus to super-Earths.

11h20 – 11h35 Frédéric MASSET (Instituto de Ciencias Físicas, UNAM, Mexico):
Planet heating as a safety net against inward migration of planetary cores.

Session II: From rocky planets to mini-Neptune planets.

11h35 – 12h15 Natalie BATALHA (NASA Ames Research Center):
Mapping exoplanet discoveries into exoplanet populations (Invited review).

12h15 – 12h30 Eric GAIMOS (University of Hawaii at Manoa):
Do smaller stars really host smaller planets?

12h30 – 14h00 Lunch break.

Afternoon Chair: Didier QUELOZ.

14h00 – 14h40 David CHARBONNEAU (Harvard Center for Astrophysics):
The compositions of small planets (Invited review).

14h40 – 14h55 Eric LÓPEZ (Institute for Astronomy, University of Edinburgh):
Using photo-evaporation to understand super-Earths and sub-Neptunes.

14h55 – 15h10 Geoff MARCY (University of California at Berkeley):
Masses and densities of planets 1-4x the size of Earth.

15h10 – 15h25 Posters quick presentations 1/3 (Chair: Sébastien FROMANG).

15h25 – 16h10 Coffee break (downstair) and posters display.
16h10 – 16h50  **James KASTING** (Penn State University):
*Theoretical perspectives on rocky planets (Invited review).*

16h50 – 17h05  **Illeana GOMEZ-LEAL** (Cornell University):
*Modeling the emission of terrestrial planets with general circulation models.*

17h05 – 17h20  **Jack LISSAUER** (NASA Ames Research Center):
*Composition, structure and formation of low-density planets within 0.5 AU of their star.*

17h20 – 17h35  **George RICKER** (Massachusetts Institute of Technology):
*Discovering Earths and super-Earths in the Solar neighborhood with TESS.*

17h35 – 17h50  **Heike RAUER** (Institute of Planetary Research, DLR - Berlin):
*The PLATO 2.0 mission.*

**Tuesday, 30th June**

*Morning Chair: Geoffrey MARCY.*

9h00 – 9h40  **Masahiro IKOMA** (The University of Tokyo):
*Theoretical perspectives on super-Earths and mini-Neptunes (Invited review).*

9h40 – 9h55  **Jean-François DONATI** (IRAP, Université de Toulouse):
*SPIRou: a nIR spectropolarimeter & high-precision velocimeter for the CFHT.*

9h55 – 10h10  **David EHRENREICH** (Université de Genève):
*The CHEOPS mission.*

10h10 – 10h25  **Andrea CHIAVASSA** (Laboratoire Lagrange, Observatoire de la Côte d’Azur):
*New view on exoplanet transits: describing the granulation pattern with three-dimensional hydrodynamical simulations of stellar convection.*

10h25 – 10h40  Posters quick presentations 2/3 *(Chair: Sébastien FROMANG)*.

10h40 – 11h25  Coffee break (downstair) and posters display.

*Session III: From mini-Neptune to giant planets.*

11h25 – 12h05  **Magali DELEUIL** (Laboratoire d’Astrophysique de Marseille):
*Twenty years of exploration of the giant planets population (Invited review).*

12h05 – 12h20  **Jean-Baptiste DELISLE** (Observatoire de Genève):
*Dissipation in planar resonant systems: implications of observed orbital configurations.*

12h20 – 12h35  **Veselin KOSTOV** (University of Toronto):
*Planets with two suns.*

12h35 – 14h00  Lunch break.

*Afternoon Chair: Jean-Philippe BEAULIEU.*

14h00 – 14h15  **Bastien COURCOL** (Laboratoire d’Astrophysique de Marseille):
*The high precision search for northern Neptunes and super-Earths with SOPHIE.*

14h15 – 14h30  **Simon BORGNIET** (IPAG - Institut de Planétologie et d’Astrophysique de Grenoble):
*The close (0.02 to 2.5 AU) giant planet population around main-sequence A-F stars.*

14h30 – 14h45  **Lauren WEISS** (University of California at Berkeley):
*Constraining the Kepler-11 planet masses with radial velocities.*

14h45 – 15h00  **Aldo Stefano BONOMO** (INAF - Osservatorio Astrofisico di Torino):
*Structure and evolution of transiting giant planets: a Bayesian homogeneous determination of orbital and physical parameters.*

15h00 – 15h15  **Ignas SNELLEN** (Leiden Observatory):
*First results from the Multi-site All Sky CAmeRA, MASCARA.*

15h15 – 15h30  Posters quick presentations 3/3 *(Chair: Sébastien FROMANG).*
15h30 – 16h15  \textit{Coffee break (downstairs) and posters display.}

16h15 – 16h30 \textbf{Philipp EIGMUELLER} (Institute of Planetary Research, DLR - Berlin): \textit{Next Generation Transit Survey (NGTS).}

16h30 – 16h45 \textbf{Gwenael BOUÉ} (IMCCE, Observatoire de Paris): \textit{On the origin of stellar spin-orbit angle in extrasolar systems.}

16h45 – 17h00 \textbf{Isabelle BOISSE} (Laboratoire d'Astrophysique de Marseille): \textit{First radial velocity observation of a binary system detected by microlensing.}

17h00 – 17h15 \textbf{Akihiko FUKUI} (National Astronomical Observatory of Japan): \textit{Characterization of microlensing planetary systems by AO imaging.}

17h15 – 17h30 \textbf{Beata DEKA-SZYMANKIEWICZ} (Torun Centre for Astronomy, N. Copernicus Univ.): \textit{Metallicity distribution for planet-hosting stars from Penn State - Torun Centre Planet Search (PTPS).}

19h00 – 20h30 \textit{Public conference by Didier Queloz (Amphithéâtre Farabeuf, rue École Médecine).}

\textbf{Wednesday, 1st July}

\textit{Morning Chair: Isabelle BARAFFE.}

9h00 – 9h15 \textbf{David BENNETT} (University of Notre Dame): \textit{Frequency of exoplanets beyond the snow line from 6 years of the MOA survey.}

9h15 – 9h30 \textbf{Michel MAYOR} (Observatoire de Genève): \textit{From Super-Earths to Giant Planets.}

9h30 – 9h45 \textbf{Hiroyuki KUROKAWA} (Tokyo Institute of Technology): \textit{Reevaluation of the possibility and impact of layered convection: application to the radius anomaly of hot Jupiters.}

9h45 – 10h00 \textbf{Sivan GINZBURG} (Racah Institute of Physics, The Hebrew University, Jerusalem): \textit{Hot-Jupiter inflation due to deep energy deposition.}

10h00 – 10h15 \textbf{Mutlu YILDIZ} (Ege University, Izmir): \textit{On the structure and evolution of planets and their host stars - effects of various heating mechanisms on the size of giant gas planets.}

10h15 – 10h30 \textbf{Marion NEVEU-VANMALLE} (Geneva University/Cambridge University): \textit{Two hot Jupiters from WASP with siblings.}

10h30 – 11h10  \textit{Coffee break (entrance hall) and posters display.}

\textit{Session IV: From giant planets to brown dwarfs.}

11h10 – 11h50 \textbf{Adam SHOWMAN} (Lunar and Planetary Lab, U. of Arizona): \textit{Theoretical perspectives on giant planets (Invited review).}

11h50 – 12h05 \textbf{Allona VAZAN} (Tel Aviv University): \textit{Convection and mixing in giant planet evolution.}

12h05 – 12h20 \textbf{François SOUBIRAN} (University of California at Berkeley): \textit{Hydrogen mixture in giant planet interiors studied with ab-initio simulations.}

12h20 – 12h35 \textbf{Alain LECAVELIER DES ÉTANGS} (Institut d'Astrophysique de Paris): \textit{Beta Pic b, physical properties and possibility of transits.}

12h35 – 12h45 \textit{Group picture outside (weather permitted).}

19h00 – 23h00 \textit{Conference dinner (Westin Paris-Vendôme Hotel, 3 rue de Castiglione).}
### Thursday, 2nd July

**Morning Chair: Michel MAYOR.**

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<tr>
<th>Time</th>
<th>Speaker/Title</th>
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<tbody>
<tr>
<td>9h00 - 9h15</td>
<td>Amaury TRIAUD (University of Toronto):&lt;br&gt;A hike across the desert.</td>
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<td>9h15 - 9h30</td>
<td>Clément RANC (Institut d'Astrophysique de Paris):&lt;br&gt;Brown dwarfs detections through gravitational microlensing.</td>
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<td>9h30 - 9h45</td>
<td>Johannes SAHLMANN (European Space Astronomy Centre, ESA - Madrid):&lt;br&gt;Exploring the giant planet - brown dwarf connection with astrometry.</td>
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<td>9h45 - 10h00</td>
<td>Javiera REY (Observatoire de Genève):&lt;br&gt;Radial velocity search for long-period exoplanets and brown dwarfs.</td>
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<tr>
<td>10h00 - 10h15</td>
<td>Henri BOFFIN (European Southern Observatory):&lt;br&gt;Possible astrometric discovery of a substellar companion to the closest binary brown dwarf system WISE J104915.57-531906.1.</td>
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<td>10h15 - 10h30</td>
<td>Szilárd CSIZMADIA (Institut für Planetary Research, DLR - Berlin):&lt;br&gt;A new transiting BD from the CoRoT sample and the frequency of close-in brown dwarfs.</td>
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<td>10h30 - 11h05</td>
<td>Coffee break (downstair) and posters display.</td>
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<tr>
<td>11h05 - 11h45</td>
<td>Gilles CHABRIER (CRAL, ENS-Lyon):&lt;br&gt;Giant planets and brown dwarfs: who’s who? (Invited review)</td>
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<tr>
<td>11h45 - 12h00</td>
<td>Jean SCHNEIDER (LUTH, Observatoire de Paris):&lt;br&gt;Difficulties with a planet and brown dwarfs who’s who.</td>
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<tr>
<td>12h00 - 12h15</td>
<td>Nicolas LODIEU (Instituto de Astrofisica de Canarias, Tenerife):&lt;br&gt;BDs and super-Jupiters in the nearest OB association to the Sun: Upper Scorpius.</td>
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<tr>
<td>12h15 - 12h30</td>
<td>Marta BRYAN (California Institute of Technology):&lt;br&gt;Searching for scatterers: high contrast imaging of young stars with wide-separation planetary mass companions.</td>
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<td>12h30 - 14h00</td>
<td>Lunch break.</td>
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**Afternoon Chair: Heike RAUER.**

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<tr>
<td>14h00 - 14h40</td>
<td>Kevin LUHMAN (Penn State University):&lt;br&gt;Observations of brown dwarfs (Invited review).</td>
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<td>14h40 - 14h55</td>
<td>Aleks SCHOLZ (University of St. Andrews):&lt;br&gt;Brown dwarfs and planemos in nearby star forming regions.</td>
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<tr>
<td>14h55 - 15h10</td>
<td>Catarina ALVES DE OLIVEIRA (European Space Agency):&lt;br&gt;Observing free-floating brown dwarfs and transiting exoplanets with JWST/NIRSpec.</td>
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<tr>
<td>15h10 - 15h25</td>
<td>Andrzej NIEDZIELSKI (Torun Centre for Astronomy, N. Copernicus Univ.):&lt;br&gt;Red giants with brown dwarfs companions.</td>
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<td>15h25 - 15h40</td>
<td>Gabriel-Dominique MARLEAU (Max-Planck-Institut für Astronomie):&lt;br&gt;Luminosities of young directly-detectable exoplanets.</td>
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<td>15h40 - 16h15</td>
<td>Coffee break (entrance hall) and posters display.</td>
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<td>16h15 - 16h30</td>
<td>Cilia DAMIANI (Institut d'Astrophysique Spatiale):&lt;br&gt;Can brown dwarfs survive on close orbits around convective stars?</td>
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<td>16h30 - 16h45</td>
<td>Karla PEÑA RAMIREZ (Pontificia Universidad Católica de Chile):&lt;br&gt;Current status of the Sigma Orionis substellar mass function.</td>
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<tr>
<td>16h45 - 17h00</td>
<td>Aina PALAU (Centro de Radioastronomía y Astrofísica):&lt;br&gt;Searching for bona-fide proto-brown dwarfs.</td>
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<td>17h00 - 17h15</td>
<td>Elena MANJAVACAS (Max Planck Institut für Astronomie - Heidelberg):&lt;br&gt;Hunting for binaries with X-Shooter spectra.</td>
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<td>17h15 - 17h30</td>
<td>Sylvestre LACOUR (LESIA, Observatoire de Paris):&lt;br&gt;Pupil masking, a tool to understand planetary formation.</td>
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<tr>
<td>17h30 - 17h45</td>
<td>Eduardo MARTÍN (Centro de Astrobiología - Madrid):&lt;br&gt;Euclid Legacy Science on Brown Dwarfs.</td>
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Friday, 3rd July

Session V: The planetary atmospheres diversity.

Morning Chair: Ignas SNELLEN.

9h00 – 9h40  David SING (University of Exeter): Observations of exoplanet atmospheres from super Earths to hot Jupiters (Invited review).

9h40 – 9h55  Vincent BOURRIER (Observatoire de Genève): Evaporating atmospheres: from hot Jupiters to super Earths.

9h55 – 10h10 Björn BENNEKE (California Institute of Technology): Four hot Jupiters with robustly oxygen-rich compositions (C/O < 0.9).

10h10 – 10h25 Zachary BERTA-THOMPSON (Massachusetts Institute of Technology): Thick high-altitude clouds on an extremely inflated hot Jupiter.

10h25 – 11h00 Coffee break (entrance hall) and posters display.

11h00 – 11h15 Matteo BROGI (University of Colorado at Boulder): Exoplanet atmospheres at high spectral resolution.

11h15 – 11h30 Catherine HUITSON (University of Colorado at Boulder): First results from a four-year survey of exoplanet atmospheres using Gemini/GMOS.

11h30 – 11h45 Taisiya KOPYTOVA (Max Planck Institut für Astronomie - Heidelberg): C/O or not C/O? Chemical fingerprinting of the birthplaces of exoplanet and brown dwarf companions.

11h45 – 12h00 Nikolay NIKOLOV (University of Exeter): HST Transmission Spectral Survey: observations, data analysis and results.

12h00 – 12h15 Antonio GARCÍA MUÑOZ (ESTEC, European Space Agency - Noordwijk): Investigating close-in exoplanet atmospheres with optical phase curves.

12h15 – 12h30 Jean-Philippe BEAULIEU (Institut d’Astrophysique de Paris): The ARIEL space mission.

12h30 – 14h00 Lunch break.

Afternoon Chair: Eduardo MARTIN.

14h00 – 14h15 Thaddeus KOMACEK (Lunar and Planetary Laboratory, University of Arizona): Transitions in efficiency of heat redistribution in hot-Jupiter atmospheres.

14h15 – 14h30 Hannah WAKEFORD (University of Exeter): Transmission spectral properties of cloud condensates.

14h30 – 14h45 Derek HOMEIER (CRAL/ENS-Lyon - ZAH/Landessternwarte Heidelberg): Condensation processes in substellar atmospheres.

14h45 – 15h00 Tiffany KATARIA (University of Exeter): Characterizing exoplanet atmospheres using atmospheric circulation models.

15h00 – 15h15 Pascal TREMBLIN (University of Exeter): Vertical mixing and fingering convection in cool brown dwarf atmospheres.

15h15 – 15h30 Vivien PARMENTIER (University of California, Santa Cruz): Cloudy and cloudless hot Jupiters.

15h30 – 16h30 Concluding session (Chair: Jean-Pierre MAILLARD).

16h30 – 18h00 Farewell wine and cheese party (forum on 2nd floor).
Posters removing.
List of posters:

1. Michalina ADAMCZYK (Torun Centre for Astronomy):
   Brown dwarf search in Penn State-Torun centre for astronomy planet search - the JOTA project.
2. Yann ALIBERT (Physikalisches Institut - Univ Bern):
   On the non-habitability of water rich planets.
3. Nicole ALLARD (GEPI, Observatoire de Paris):
   New line profiles of potassium perturbed by molecular hydrogen for very cool brown dwarfs.
4. Henri BOFFIN (European Southern Observatory):
   Regaining the FORS: optical ground-based transmission spectroscopy of the exoplanet WASP-19b with VLT+FORS2.
5. Henri BOFFIN (European Southern Observatory):
   The closest known flyby of a star to the Solar System.
6. Henri BOFFIN (European Southern Observatory):
   Temperature constraints on the coldest brown dwarf known.
7. Isabelle BOISSE (Laboratoire d’Astrophysique de Marseille):
   Obliquities measured with SOPHIE.
8. Giovanni BRUNO (Laboratoire d’Astrophysique de Marseille):
   Disentangling planetary and starspots features.
9. Ilaria CARLEO (INAF-Astronomical Observatory of Padua):
   Searching for extrasolar planets around cool stars with GIANO.
10. Priyanka CHATURVEDI (Physical Research Laboratory):
    Study of low mass stars in eclipsing binary systems by radial velocity with PARAS.
11. Lester DAVID (LESIA, Observatoire de Paris):
    Beta Pictoris transit with PICSAT.
12. Jadzia DONATOWICZ (Technical University of Vienna):
    ‘alOha’ - A dynamically organized PLANET data plotting environment.
13. Néstor ESPINOZA (Instituto de Astrofísica, Pontificia Universidad Católica de Chile):
    The impact of our limb-darkening assumptions on the retrieval of transit parameters.
14. Taran ESPLIN (Penn State University):
    Searching for brown dwarfs in Chamaeleon I.
15. Octavio Miguel GUILERA (Instituto de Astrofisica - Universidad Nacional de La Plata):
    Giant planet formation via pebble accretion.
16. Guillaume HEBRARD (Institut d’Astrophysique de Paris):
    Detecting the spin-orbit misalignment of the super-Earth 55 Cnc e.
17. Guillaume HEBRARD (Institut d’Astrophysique de Paris):
    HARPS-N and SOPHIE joint follow-up of Kepler planetary candidates.
18. Nicolas IRO (University of Hamburg):
    VIPER: toward a universal model for planetary climate.
19. Yui KAWASHIMA (The University of Tokyo):
    Transmission spectrum models of exoplanet atmospheres with haze: Effects of growth and settling of haze particles.
20. Flavien KIEFER (Université de Tel-Aviv):
    Revisiting APOGEE’s database with TODCOR: search for contact binaries and compact objects.
21. Jacques LASKAR (IMCCE):
    Toward a rigorous framework for radial velocities computations.
22. Man Cheung Alex LI (The University of Auckland):
    Unusual light curves with short-period brightness variations in the MOA database.
23. Jorge LILLO-BOX (Astrobiology Center, INTA-CSIC):
    Close-in brown dwarfs and massive planets.
24. Kento MASUDA (University of Tokyo):
    Mass, radius, and orbital architecture of hot Neptunes from radial velocities and transit variations.
25. Federico MOGAVERO (Institut d’Astrophysique de Paris):
    Mass measurement through gravitational microlensing: non-inertial observers. Application to exoplanets and brown dwarfs (CANCELED).
26. Paul MOLLÈRE (Max Planck Institute for Astronomy):
    The C/O ratio’s impact on hot and less hot Jupiter’s spectra - A hint on the formation mode?
27. **Mauricio ORTIZ** (Landessternwarte Heidelberg):  
*Close-in planets around evolved stars: the peculiar case of Kepler-432b.*

28. **Stefanie RAETZ** (ESTEC, European Space Agency - Noordwijk):  
*Investigating stellar activity by observations of planetary transits.*

29. **Sophia SULIS** (Laboratoire Lagrange, OCA):  
*How reliable is an extrasolar planet detection claim when stellar noise is unknown? An efficient approach with statistical control of the detection significance.*

30. **Yuki TANAKA** (Nagoya University):  
*Atmospheric escape by magnetically driven wind from gaseous planets and atmospheric structures.*

31. **Julia VENTURINI** (University of Bern):  
*Water condensation during formation: the impact on the critical core mass.*

32. **Paul WILSON** (Institut d’astrophysique de Paris):  
*The SOPHIE search for northern extrasolar planets: Exploring the planet-brown dwarf boundary.*

33. **Atsunori YONEHARA** (Kyoto Sangyo University):  
*Follow-up observation of microlensing at Kohyama Astronomical Observatory.*

34. **Olga ZAKHOZHAY** (Main Astronomical Observatory, National Academy of Sciences of Ukraine):  
*New approach to identify planetary or brown dwarf companion in a circumstellar disk based on spectral energy distribution profile of the system.*

35. **Olga ZAKHOZHAY** (Main Astronomical Observatory, National Academy of Sciences of Ukraine):  
*SED simulation results of a possible ring around the young brown dwarf G196-3B.*

36. **Zenghua ZHANG** (Instituto de Astrofisica de Canarias):  
*Identification of the nature of metal-poor low-mass subdwarfs.*

37. **Nikolay NIKOLOV** (Astrophysics Group, University of Exeter):  
*Radial velocity eclipse mapping of exoplanets.*