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Webinar: Adaptive optics in astronomy and beyond - December 4, 2020

An online conference jointly organized by the Australian National University (ANU, Australia), Université Paris Sciences et Lettres (PSL, France) and the Università di Padova (UniPadova, Italy)

Background

Adaptive optics (AO) in astronomy emerged in the early 1990s, then developed in the wake of major technological breakthroughs in three key areas: wave front sensing, high-performance real-time calculation and deformable mirrors. These advances were made possible by a close and efficient collaboration between academic institutions and industries.

ANU, PSL and UniPadova are jointly organizing an online conference/workshop to review the history of AO development as well as its latest and near future realizations, with a special emphasis of the role they have themselves played in this evolution over the last three decades.

This online conference will first focus on historical aspects of AO developments, showing how major scientific and technological locks were progressively undone, thanks to international cooperation and to academic-industrial links. It will then present some examples of today's and tomorrow's realizations in AO, both in astronomy and other areas such as medical sciences.

Speakers

Six leading scientist and researchers from the three institutions will present the history of AO, recent insights from research and innovative applications of AO to other scientific fields:

- **Marie Glanc**, research engineer in charge of the biomedical activities at LESIA / Observatoire de Paris-PSL.
- **Céline d'Orgeville**, professor at ANU's Research School of Astronomy and Astrophysics, leader of the Laser Guide Star activities at ANU's Advanced Instrumentation and Technology Centre.
- **Roberto Ragazzoni**, Director of the Astronomical Observatory of Padova and member of the Accademia dei Lincei.

Photo credit: Laser beams coming out of the European Southern Observatory's Very Large Telescope, located in the Atacama Desert in Chile. © ESO/Gerhard Hüdepohl / Photo published in the National Geographic magazine n° 234, April 2019.

- **François Rigaut**, professor at ANU and Adaptive Optics Principal Scientist at the Advanced Instrumentation and Technology Centre, Research School of Astronomy and Astrophysics.
- **G rard Rousset**, leader of the high angular resolution scientific team at LESIA / Observatoire de Paris-PSL.
- **Valentina Viotto**, researcher at the Italian national institute for Astrophysics (INAF), Observatory of Padova.

Closing remarks will be provided by **Claude Catala**, former President of the Observatoire de Paris-PSL and astrophysicist. Discussions will be moderated by **Damien Gratadour**, associate professor at Observatoire de Paris – PSL, Instrument Scientist at the Research School of Astronomy & Astrophysics – ANU and head of PSL’s representative office to Australia.

Attendees will be welcome to participate in the moderated discussions that will follow each talk. Questions can also be provided prior to the start of the conference. The conference will be fully recorded.

Date and time

The webinar will be held on Friday, **December 4, 2020**, starting at **8:00 am Central European Time (CET) = 18:00 Australian Eastern Standard Time (AEST)**, and ending at 10:15 am CET = 20:15 AEST.

Registration will be free but mandatory at the following link (access to the webinar possible from 7:45 am): https://anu.zoom.us/webinar/register/WN_9_l2EXolQQ-irhjmWCqpQQ

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About ANU and ANU’s Research School of Astronomy and Astrophysics

The Australian National University (ANU) is located in Australia's capital city, Canberra, and is one of the world's leading research universities and one of the most selective institutions of higher learning globally.

The ANU Research School of Astronomy and Astrophysics seeks to advance the observational and theoretical frontiers of astronomy and astrophysics. The Advanced Instrumentation and Technology at RSAA provides designs and builds astronomical instrumentation for telescopes around the world.

About PSL and the Observatoire de Paris-PSL

Universit  PSL is a leading French university providing research and education programs in all disciplines including sciences, humanities, management and art. PSL ranked 36th worldwide in the Academic Ranking of World Universities.

Established in 1667, Observatoire de Paris-PSL is a member institution of PSL and a renowned organization dedicated to research and education in astronomy and astrophysics.

About UniPadova and the Observatory of Padova

Founded in 1222, the University of Padova is one of Europe’s oldest higher education institution and hosts today more than 65.000 students. It proposes both scientific research and teaching activities in 32 Departments, from the bachelor the Ph.D. level.

The Observatory of Padova is one of the main structures of the National Institute of Astrophysics (INAF). The main activity of the Observatory is to advance research in astronomy and astrophysics.

Programme – Adaptive Optics Webinar – December 4, 2020

Timings	Sessions	Speakers
8:00 - 8:05 (CET, Europe) / 18:00 - 18:05 (AEST, Canberra)	Welcome words	<ul style="list-style-type: none"> • Alain Fuchs, President, Université PSL • Rosario Rizzuto, Rector, University of Padova (TBC) • Brian P. Schmidt, Vice-Chancellor & President, ANU
8:05 - 8:30 (CET) / 18:05 - 18:30 (AEST)	<u>Scene setting:</u> Introduction to Adaptive Optics (AO)	<ul style="list-style-type: none"> • G�rard Rousset, leader of the high angular resolution scientific team at LESIA / Observatoire de Paris-PSL.
8:30 - 8:50 (CET) / 18:30 - 18:50 (AEST)	<u>Session 1:</u> <i>Laser Guide Stars for AO: past, present and future</i>	<ul style="list-style-type: none"> • C�line d'Orgeville, professor at ANU's Research School of Astronomy and Astrophysics, leader of the Laser Guide Star activities at ANU's Advanced Instrumentation and Technology Centre.
8:50 - 9:10 (CET) / 18:50 - 19:10 (AEST)	<u>Session 2:</u> <i>The various breeds of AO for astronomy</i>	<ul style="list-style-type: none"> • Fran�ois Rigaut, professor at ANU and Adaptive Optics Principal Scientist at the Advanced Instrumentation and Technology Centre, Research School of Astronomy and Astrophysics.
9:10 - 9:30 (CET) / 19:10 - 19:30 (AEST)	<u>Session 3:</u> <i>AO astronomical systems implementation challenges</i>	<ul style="list-style-type: none"> • Valentina Viotto, researcher at the Italian national institute for Astrophysics (INAF), Observatory of Padova
9:30 - 9:50 (CET) / 19:30 - 19:50 (AEST)	<u>Session 4:</u> Wave-front sensing systems: past, present, future	<ul style="list-style-type: none"> • Roberto Ragazzoni, Director of the Astronomical Observatory of Padova and member of the Accademia dei Lincei
9:50 - 10:10 (CET) / 19:50 - 20:10 (AEST)	<u>Session 5:</u> Adaptive Optics for medical imagery	<ul style="list-style-type: none"> • Marie Glanc, research engineer in charge of the biomedical activities at LESIA / Observatoire de Paris-PSL.
10:10 - 10:15 (CET) / 20:10 - 20:15 (AEST)	Closing remarks	<ul style="list-style-type: none"> • Claude Catala, former President of the Observatoire de Paris-PSL and astrophysicist.