

# ANDREA CHIAVASSA

BORN JANUARY 8TH 1979 IN ITALY

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## Current position

- **Observatoire de la Côte d'Azur—France**

*Laboratoire Lagrange*

- *since september 2012*: permanent position at CNRS
- *Scientific interests*: Multidimensional Radiative Transfer, Multidimensional Radiative Hydrodynamics, Stellar surface convection, Planetary atmosphere physics, Spectroscopy, Interferometry

## Background

- **University of Nice—France**

*Laboratoire Lagrange*

- *December 2018*: Habilitation à Diriger des Recherches (HDR), "*A Journey across the Hertzsprung-Russell diagram with 3D hydrodynamical simulations of cool stars*"

- **University of Montpellier II—France**

*Groupe de Recherche en Astronomie et Astrophysique du Languedoc (GRAAL)*

- *October 2004 to June 2008*: PhD, "*Atmospheric dynamic of red supergiant stars*" under the supervision of Pr. B. Plez

- **University of Turin, Italy—University of Grenoble I, France**

*Università degli Studi di Torino and Laboratoire d'Astrophysique de Grenoble (LAOG)*

- *2002-2004* : "Laurea in Astrofisica e Fisica Cosmica" (equivalent to master degree in Astrophysics)
- *1999-2002*: "Laurea in Fisica" (equivalent to bachelor degree in Physics)

- *1998* : "Maturità" - (final High School certificate, equivalent to the General Certificate of Education, Advanced Level)

## Research experience

- **Fellowship (october 2010 - august 2012)—Institut d'Astronomie et d'Astrophysique**

*Belgium*

- 3D modelling of cool stars - Gaia predictions and spectroscopic analysis of peculiar stars with Pr. Alain Jorissen

- **Fellowship (september 2008 - september 2010)—Max Planck Institute for Astrophysics**

*Germany*

- Research topic: 3D modelling of convection in stellar atmosphere of cool stars. Interferometric and spectroscopic observables for red supergiant, K-giant and AGB stars with Pr. Martin Asplund

- **PhD student (october 2004 - June 2008)**—University of Montpellier II  
*GRAAL, Montpellier, France*
  - Development of a LTE-3D radiative transfer code for radiation hydrodynamics simulations that includes billions of molecular and atomic lines for a detailed treatment
  - Computation of spectroscopic observables for comparison to observations in terms of line profiles, asymmetries and shifts at different wavelengths and large range high resolution spectra: constrain of the atmospheric dynamics
  - Computation of interferometric observables for comparison to observations: constrain of the surface structure size of the convective pattern
- **University of Turin - LAOG**—Italy, France  
*Universita' degli Studi di Torino et Laboratoire d'Astrophysique de Grenoble (LAOG), France*
  - Master degree final project ("Laurea in Astrofisica e Fisica Cosmica") at the Laboratoire d'Astrophysique de Grenoble (LAOG), France, under the supervision of Cecilia Ceccarelli (2004, 8 months) -  
*The 90-110  $\mu\text{m}$  dust feature in low to intermediate mass protostars*
  - Bachelor final project ("Laurea in Fisica") at the University of Turin under the supervision of Gianni Navarra (Mars - June 2002) -  
*Study of the high voltage circuit of photomultipliers of Pierre Auger's Observatory*

## Scientific responsibilities, chronological order

- 2023 - Member of HiRISE science group
- 2019 - Member of ARIEL, WPs stellar activity and characterisation
- 2019 - Member of SPICA instrument science team that will be mounted at CHARA telescope
- 2018 - Member of JMMC, user support AMHRA node
- 2017- Membre de Pollux-b (ex-LUVOIR) now in stand-by
- 2013 - Member of the Science Team of ANDES, high resolution spectrograph for the ELT
- 2014 - Member of PLATO, WP122200, WP122300, WP122400
- 2011 - Member of Gaia, CU6/CU8

## Administrative responsibilities, chronological order

- 2024 - 2029: Elected member of the laboratory Council, Lagrange
- 2021 - : Elected member of the Conseil Scientifique et Pédagogique - Ecole Universitaire de Recherche SPECTRUM, UCA
- 2016 - 2021: Elected member of the Comité National de la Recherche Scientifique - Section 17
- 2014 - 2016: Member of the Commission Permanente de Ressources Humaines en section 34 at the University of Nice
- 2013 - 2016: In charge for the organisation of the seminar at Lagrange Laboratory

## Awards

- 2021-2024 Prime d'Encadrement Doctorale et de la Recherche (PEDR, Research Reward of CNRS)
- 2021-2022 Scientific Visitor programme at Max Planck for Astrophysics (Garching), 18 keuro, and Excellent Cluster Origin (Munich), 7.5 keuro
- 2020-2025 Agence National de la Recherche (ANR), Project "PEPPER", France, Research grant - PI, 682 keuro
- 2020-2021 Scientific Visitor programme (ESO), Research grant - PI, 27 keuro
- 2016-2019 Programme Nationale de Physique Stellaire (PNPS, CNRS), France, Research grant - PI, 35 keuro
- 2020 National programs, University and Observatory of Nice, France, Research grant for organizing an international conference - PI, 20 keuro
- 2020-2025 External collaborator in the ERC-advanced Grant EXWINGS (PI S. Hoefner)
- 2010 Fonds de la recherche scientifique(FNRS), Belgium, Postdoc research grant, 50 keuro
- 2008 Max Planck Institute research grant, Germany, Postdoc research grant, 42 keuro

## Scientific Communications

- **Invited talks conferences and workshops:**

- *September 2022*: Lecture at the International school of Les Houches: Exo-Atmospheres (Les Houches, France).
- *December 2021*: Workshop-Atelier sur la science du système solaire avec l'ELT (Marseille and virtual).
- *November 2021*: IAU Symposium 366 - review talk, The Origin of Outflows in Evolved Stars (Leuven, Belgium).
- *November 2020* : First French workshop on HIRES-ELT (Virtual).
- *June 2019*: STARPLANET2019 Ringberg Max Planck conference (Ringberg, Germany).
- *May 2019*: Conference of the French Astrophysical Society (SF2A, Nice, France).
- *January 2019*: SPICA Science Group Kick Off meeting (Nice, France).
- *July 2016*: Conference European Astronomical Society - Evolved stars at high angular resolution (Athens, Greece).
- *May 2016*: FNRS Contact Group FNRS (Bruxelles, Belgium).
- *July 2014*: Conference Why Galaxies Care About AGB Stars - A closer look in space and time (Vienna, Austria).
- *June 2014*: ESTER workshop (Toulouse, France).
- *May 2011*: Conference at Collège de France (Paris, France).
- *May 2009*: Workshop on Interferometry Imaging WII09 (Goutelas, France).
- *July 2007*: Conference of the French Astrophysical Society (SF2A, Grenoble, France).

- **Contributed talks/posters in conferences and workshops:**

- *January 2024*: Colloque de prospective du PNPS (Marseille, France).
- *September 2023*: Geophysical and Astronomical Fluid Dynamics Experiments and Models (Nice, France).
- *April 2022*: Conference The Sharpest Eyes on the Sky (Exeter, UK, and hybrid).
- *June 2021*: Conference of the French Astrophysical Society (Virtual).
- *June 2021*: unsolved problems in red Giants And supergiants (GAPS) (Virtual)
- *April 2021*: Death-throes of Evolved stars (DELVE) (Virtual)
- *October 2018*: High Resolution Spectroscopy for Exoplanet atmospheres (HoRSE) (Nice, France)
- *August 2018*: IAU-General Assembly - FM 12 "Calibration and Standardization Issues in UV-VIS-IR Astronomy" (Vienna, Austria)
- *August 2018*: IAU-General Assembly - IAUS 343 "Why Galaxies Care About AGB Stars" (Vienna, Austria)
- *March 2018*: Colloque de Perspective PNPS (Montpellier, France)
- *October 2017*: Workshop "Asteroseismology and Interferometry" (Nice, France).
- *July 2017*: Workshop "5th CHEOPS Science Workshop and the ESA Open Time Workshop" (Graz, Austria).
- *January 2017*: Workshop "Troisième Atelier PLATO/France" (Montpellier, France).
- *July 2016*: Conference "European Astronomical Society, The effects of solar and stellar magnetic activity on planets" (Athens, Greece).
- *April 2016*: Conference "International Venus Conference 2016" (Oxford, UK).
- *October 2015*: Workshop "Exoplanetary Atmospheres and Habitability Thermodynamics, Disequilibrium and Evolution focus group" (Nice, France).

- *July 2015*: Conference "Pathways towards habitable planets" (Bern, France).
- *June 2015*: Conference "From Super-Earths to Brown Dwarfs: Who's who?" (IAP, Paris, France).
- *June 2015*: Conference "Physics of Evolved Stars, a conference dedicated to the memory of Olivier Chesneau" (Nice, France).
- *November 2012*: Conference "Betelgeuse workshop" (Paris, France).
- *October 2011*: Conference "Ten years of VLTI: from first fringes to core science" (ESO, Garching).
- *June 2011*: GREAT-ESF Stellar Atmospheres in the Gaia Era Workshop (Bruxelles, Belgium).
- *April 2011*: Red giants: modelisation and observations (Montpellier, France).
- *June 2010*: Conference of the French Astrophysical Society (SF2A, Marseille, France).
- *Mars 2010* : Workshop on "The Origin and Fate of the Sun: Evolution of Solar-mass Stars Observed with High Angular Resolution" (ESO, Garching).
- *May 2007*: Workshop on "Perspectives in Radiative Transfer and Interferometry" (Château de Pizay, France).
- *June 2006*: Conference of the French Astrophysical Society (SF2A, Paris, France).
- *June 2006*: CO5BOLD Workshop 2006 (Freiburg, Germany).
- *May 2005*: 3rd GRETA Workshop on "Radiative Transfer and Applications to Very Large Telescopes" (Fréjus, France).

• **Invited seminar talks:**

- *April 2024* : IRAP of Toulouse seminar.
- *December 2023* : Turin observatory seminar.
- *April 2022* : Excellence Cluster institute seminar.
- *November 2021* : Career Seminar talk at MPA/MPE/LMU/ESO.
- *September 2021* : Max Planck for Astrophysics institute seminar.
- *September 2021* : MATISSE Science group talk
- *May 2021* : ESO Lunch Talk.
- *September 2019* : LUPM of Montpellier.
- *July 2019* : University of Pisa.
- *April 2019* : Observatory of Nice.
- *June 2017* : IPAG of Grenoble.
- *November 2014* : LAB of Bordeaux.
- *June 2014* : Arcetri in Florence.
- *February 2014* : ESO.
- *February 2012* : IRAP of Toulouse.
- *February 2011* : LUPM of Montpellier.
- *January 2011* : Observatoire Royale de Belgique.
- *February 2010 and January 2012* : Observatoire of Paris.
- *January 2010, February 2011, February 2012* : Observatoire de la côte d'azur, Nice.
- *October 2008* : Infrared Astronomy Group, Max Planck Institute for Radioastronomy, Bonn, Allemagne.
- *September 2007, April 2009, May 2012*: Institute of Astronomy, University of Vienna, Vienne, Autriche - AGB stars working group.

- **Other conferences**

- *January 2024*: Ariel day France (Virtual meeting)
- *June 2023*: The Alpha Centauri System (Nice, France)
- *November 2022*: EXO-ELT - Atelier sur l'Étude de la Formation Planétaire et des Exoplanètes avec l'ELT (Frejus, France)
- *April 2022*: Kick off meeting of ANDES (Virtual meeting)
- *June 2021*: Ariel Consortium Meeting (Virtual meeting)
- *May 2021*: PLATO WG122 Meeting (Virtual meeting)
- *February 2021*: GRAVITY+ Community Workshop (Virtual meeting)
- *January 2021*: Ariel day France (Virtual meeting)
- *October 2020*: IR2020 Ground-based thermal infrared astronomy: Past, present and future (Munich-virtual, Germany)
- *November 2018*: SOHO-29: 22 years of GOLF and VIRGO: 2 sunspot cycles seen by seismology (Nice, France)
- *September 2018*: Colloque de Perspective PNP (Nice, France).
- *July 2018*: Journées SF2A (Bordeaux, France).
- *January 2018*: Workshop "Atelier PLATO/FRANCE" (Nice, France).
- *March 2017*: First European Asymmetry Symposium (Nice, France).
- *October 2017*: Asterinter-Workshop (Nice, France).
- *April 2017*: IAU Gaia Symposium 330 (Nice, France).
- *Juin 2011*: Gaia GREAT Plenary Meeting (Bruxelles, Belgium).
- *Mai 2009*: Workshop "The Giant Branches" (Leiden, The Netherlands).
- *Juillet 2007* : Ecole de physique stellaire de "Non-LTE line formation for trace elements in stellar atmospheres" (Nice, France).
- *Décembre 2006* : School "Nucleosynthèse stellaire 50 ans après B2FH" (Aussois, France).
- *Novembre 2006* : 14th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun (CS14, Pasadena, USA).
- *Novembre 2005* : Workshop Physique stellaire avec ALMA (Montpellier, France).
- *Mai 2005* : "Grand Challenge Problems in Computational Astrophysics : Workshop IV Transfer Phenomena" (Los Angeles, USA).
- *Octobre 2004* : School de physique stellaire de "Stellar fluids dynamic and numerical simulations: From the Sun to Neutron Stars" (Aussois, France).
- *Mars 2004* : School "Chronologie de la formation du Système Solaire, des grains présolaires aux objets de Kuiper" (Aussois, France).

## Referee/Reviewer

- *Agence Nationale de la Recherche*
- *Nature*
- *Astronomy & Astrophysics*
- *The Astrophysical Journal*
- *Astronomical Society of Pacific*
- *Reviewer for telescope time and several european countries grants*

## Scientific Organizing Committee:

- July 2024, SOC for High Resolution Spectroscopy for Exoplanet atmospheres-2 (2HoRSE) - Berlin, Germany
- November 2020, SOC for First French workshop on HIRES-ELT
- September 2019, SOC for Ecole Evry Schatzman of PNPS: Interaction stellar-planet
- October 2018, Organiser, Chair and SOC for the High Resolution Spectroscopy for Exoplanet atmospheres (HoRSE) - Nice, France
- October 2015, Organiser, Chair and SOC for the Exoplanetary Atmospheres and Habitability Thermodynamics, Disequilibrium and Evolution focus group - Nice, France
- January 2014, SOC for VLTI PIONIER and community days - Grenoble, France
- September 2013, Co-Organiser, Chair and SOC for the VLTI school, High angular resolution for stellar astrophysics Stellar activity, surface dynamics, fundamental parameters, exoplanetary systems, pulsations - Barcelonnette, France
- November 2012, SOC for the Betelgeuse Workshop 2012 The Physics of Red Supergiants: Recent Advances and Open Questions - Paris, France

## Press release:

- October 2023, ESO, OCA press release: <https://eso.org/public/images/potw2343a/>
- March 2023, Excellent Cluster Origin, OCA press release: <https://www.mpe.mpg.de/7938315/news20230320>
- May 2022, Excellent Cluster Origin, Max Planck, OCA, INAF press release: <https://www.mpa-garching.mpg.de/1054448/news20220530>
- June 2021, ESO/CNRS press release: <https://www.eso.org/public/news/eso2109/>
- June 2021, Excellent Cluster Origin, LMU, OCA, INAF press release: <https://www.origins-cluster.de/en/news-events/news/translate-to-english-detail/liquid-water-on-exomoons-of-free-floating-planets>
- December 2020, Gaia-EDR3 press release: <https://www.cosmos.esa.int/web/gaia/earlydr3>
- December 2019, ESO/CNRS press release: <https://www.eso.org/public/australia/news/eso2003/?lang>
- December 2018, Institut national des sciences de l'Univers (CNRS): <http://www.insu.cnrs.fr/node/9658>
- December 2017, Nature (doi:10.1038) and ESO/CNRS press release: <https://www.eso.org/public/images/eso1741a/?lang>
- June 2011, Astronomy & Astrophysics (2011, vol. 531, A117) and ESO press release: <http://www.eso.org/public/news/eso1121/>
- May 2010, Astronomy & Astrophysics Highlights: <http://www.aanda.org/content/view/576/282/lang,en/>
- March 2010, Institut national des sciences de l'Univers (CNRS): <http://www.insu.cnrs.fr/co/ama09/la-convection-de-beltegeuse-mise-en-evidence-par-observation-et-simulation>
- March 2010, Max Planck Insititute press release: [http://www.mpa-garching.mpg.de/mpa/research/current\\_research/hl2010-3/hl2010-3-en.html](http://www.mpa-garching.mpg.de/mpa/research/current_research/hl2010-3/hl2010-3-en.html)
- November 2009, Astronomy & Astrophysics Highlights: <http://www.aanda.org/content/view/420/248/lang,en/>

## Teaching and Diffusion of Scientific Knowledge

- Astrophysics: Master-MAUCA, Meteor, Nice, France - 20h per year (2015, 2021, 2022, 2023)
- Physics: Mechanics and Thermodynamics (university level 2011, Bruxelles, Belgium) - 36h
- Informatics: Word, Excel and Power Point (university level 2006, Montpellier, France) - 20h
- Astrophysics: Tutor 2005, Montpellier, France - 3h
- Astronomy in school - C2PU project with Italian high school. 15h per year 2015, 2016, 2017
- Participation to the animations for the Year of Physics 2005 (Montpellier, France), (high school and primary school) - 60 hours
- Participation to public animations of astronomy every years 3-4 public conferences

## Students/Postdocs

- Postdoc: Anand Kapoor, 2023-2025 (Direction 100%)
- Postdoc: Fabian Menezes, 2021-2022 (Direction 100%)
- Ph.D student: Elysabeth Béguin, 2022-2025 (Direction 100%)
- Ph.D student: Adrien Simmonin, 2022-2025 (Co-direction 30%)
- Ph.D student: Maria Chiara Maimone, 2019-2022 (Direction 100%)
- Ph.D student: Kateryna Kravchenko, 2014-2018 (co-direction 50% with University of Bruxelles)
- Masters students: Kateryna Kravchenko (2014), Ilona Boian (2015), Amael Roubeau-Tissot (2019)

## Visited Institutes:

- *February 2024*: MPA, Garching/Munich  
Collaboration with Prof S. de Mink
- *April 2023*: MPA, Garching/Munich  
Collaboration with Prof S. de Mink
- *September 2021 to July 2022, long term visit*: MPA and Excellent Cluster Origin, Garching/Munich  
Collaboration with Prof S. de Mink and Prof. R. Kudritzki
- *September 2020 to July 2021, long term visit*: ESO, Garching  
Collaboration with Dr M. Wittkowski
- *July 2019*: University of Pisa, Italy  
Collaboration with Pr S. Degli'Innocenti
- *February 2014, January 2015, and July 2017*: ESO, Garching  
Collaboration with Dr M. Wittkowski
- *February 2011 and February 2012*: Observatoire de Nice, France  
Collaboration with Dr L. Bigot
- *September 2007, April 2009, and May 2012*: Institute of Astronomy, University of Vienna, Vienna, Austria  
Collaboration with Dr Josef Hron
- *November 2007 and March 2008*: Uppsala Astronomical Observatory, Uppsala, Sweden  
Collaboration with Prof Bertrand Plez
- *November 2008*: Max-Planck-Institute for Radioastronomy, Bonn, Germany  
Collaboration with the Infrared Astronomy Group lead by Pr. Gerd Weigelt
- *Mars 2007*: Paris Observatory, Meudon, France  
Collaboration with Dr Hans-G. Ludwig



- *October 2006*: ENS Lyon, France  
Collaboration with Dr B. Freytag

## Languages

- Italian - native speaker
- French - excellent
- English - excellent
- German - average
- Spanish - basic notions

## Computer and Programming Skills

- **Operating systems administration:** Mac OS X, GNU/Linux, Windows
- **Programming:**
  - Fortran95, IDL, Shell Script, Python
  - Astronomical software: synthetic spectrum calculation, photosphere models calculations
- **Editing:** Latex, IWork, Word, Excel, Power Point