

Curriculum Vitae, Célia Desgrange

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France

Born on August 27th, 1997 in Strasbourg (France)
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Education

- 2021-pres. **Philosophiae Doctor (Ph.D.) in Astronomy and Astrophysics**, see the first experience.
Institut de Planétologie et d'Astrophysique de Grenoble (IPAG), Grenoble, France
Max-Planck Institute for Astronomy (MPIA), Heidelberg, Germany
- 2017-2021 **ENS Graduate Degree**
École Normale Supérieure (ENS) de Lyon, Lyon, France
- 2019-2020 **Master in Astronomy, Astrophysics and Spatial Engineering**, with honors
Observatory of Paris within the University of Paris, France
- 2018-2020 **Master in Physics**, with honors
ENS de Lyon within the University of Lyon, France
- 2017-2018 **Bachelor in Physics**, with honors
ENS de Lyon within the University of Lyon, France
- 2015-2017 **Preparatory Class** in Mathematics, Physics and Chemistry, with honors
The Preparatory Class correspond to two years of intensive courses preparing for the entrance exam to French “Grandes Écoles”. ENS de Lyon is one of these prestigious “Grandes Écoles”.
Kléber High-School, Strasbourg, France
- 2014-2015 **Scientific “Baccalauréat”**, with honors
Jean Monnet High-School, Strasbourg, France

Experience

- 2021-pres. **Ph.D.** entitled “Architecture of planetary systems by direct imaging of disks and exoplanets with the SPHERE instrument at the VLT, and in the context of the SPHERE+ upgrade.”
Co-supervision between IPAG, Grenoble, France and MPIA, Heidelberg, Germany
3 years, supervised by GAËL CHAUVIN, JULIEN MILLI and THOMAS HENNING
- 2021 **Research project** on Planetary system architectures with low-mass inner planets
IPAG, Grenoble, France
5 months, supervised by JULIEN MILLI and GAËL CHAUVIN
- 2020-2021 **Research project** on Data processing of protoplanetary disks to look for the exoplanets creating the observed substructures in direct imaging
MPIA, Heidelberg, Germany
5 months, supervised by FAUSTINE CANTALLOUBE and THOMAS HENNING
- 2020 **Master’s thesis** on Experimental and theoretical limitations from polarisation shifts in High-Contrast Imaging

Laboratoire d'Études Spatiales et d'Instrumentation en Astrophysique (LESIA), Observatory of Paris, Meudon, France

4 months, supervised by PIERRE BAUDOZ and RAPHAËL GALICHER

2020/03 **Observational week** (selection of the targets to observe, manipulation of the 1m52, 1m20, and 80cm telescopes and their domes, data processing and analysis)

Observatory of Haute-Provence, France

1 week, supervised by NOËL ROBICHON and HERVÉ DOLE

2019 **Master research project** on the In-depth characterisation of the young planetary system HD 95086 with ten VLT/SPHERE observations

Universidad de Chile, Santiago, Chile

4 months, supervised by GAËL CHAUVIN and PATRICIO ROJO

2018 **Bachelor's thesis** on Testing the Averaged Inhomogeneous Cosmology model by using maximum likelihood estimation to fit light-curves of Type Ia supernovae

Centre de Recherche Astrophysique de Lyon (CRAL), Lyon, France

2 months, supervised by THOMAS BUCHERT and ASTA HEINESEN

Selected conferences and workshops, & Talks

2023/08 **JWST Cycle 3 Debris disk proposal workshop**, *Heidelberg, Germany*

◦ Contributed talk: The intriguing architecture of the system HD 120326

2023/06 **Week of the French astronomy (SF2A)** conference, *Strasbourg, France*

◦ Contributed talk: The intriguing double-belt system HD 120326

2023/06 **Santa Cruz, Caltech, and JPL group meeting talks**, *California, USA*

◦ Contributed talk: Architecture of planetary systems with low-mass inner planets

2023/01 **Exosystèmes III** workshop, *Marseille, France*

◦ Contributed talks: In-depth study on the young multi-belt system HD95086 hosting (*at least*) one giant planet

2022/07 **In the Spirit of Lyot** conference, *Leiden, Netherlands*

◦ Poster: Architecture of planetary systems with low-mass inner planets

2022/06 **Week of the French astronomy (SF2A)** conference, *Besançon, France*

◦ Contributed talk: the young exoplanetary system HD 95086

2021/11 **Exosystèmes II** workshop, *Toulouse, France*

◦ Contributed talk: Architecture of planetary systems with low-mass inner planets

Teaching

2022 **Teacher in Python** in 3rd-year of Bachelor (16h, Physics sector)

Université Grenoble Alpes, Grenoble, France

2021 **Teacher in Mathematics** in 1st-year of Bachelor (32h, Biology sector)

Université Grenoble Alpes, Grenoble, France

2019-2020 **Examiner in Mathematics and Physics** in Preparatory Class (Physics sector)

Buffon High-School, Paris, France

2017-2018 **Volunteer teacher of French as a foreign language** for migrants
Lyon, France

Scientific community work

- 2023/10 **Involvement in the open day of the MPIA institute**
◦ “**First discoveries in exoplanet**” outreach talk
◦ Poster presentations, animation of the spectroscopy station
MPIA, Heidelberg, Germany
- 2023/10 **Co-organiser (SOC) of the annual MPIA-PSF retreat**
MPIA, Heidelberg, Germany
- 2023/08 **Co-organiser (SOC, LOC) of the workshop JWST Cycle 3 proposals on Debris disk and Exoplanets**
MPIA, Heidelberg, Germany
- 2023/05 **“From childhood dream to exoplanet detection: doing research in astrophysics”** outreach seminar given to students, their parents and teachers.
Jean Sturm High-school, Strasbourg, France
- 2022/11 **“What is a PhD? What deals my PhD with? All started for me with my research experience in Chile, a country of flourishing observatories”** outreach seminar given to student part of an astrophysics club.
Jean Sturm High-school, Strasbourg, France
- 2022/08 **“Exploration of planetary systems by using direct imaging”** outreach seminar given to amateur astronomers, mostly from SAFGA.
Bellefosse, Alsace, France
- 2021/08 **“Investigation of planetary systems by using direct imaging”** outreach seminar given to amateur astronomers, mostly from SAFGA.
Chalet de la Perheux, Alsace, France
- 2015-2019 **Volunteer to the national event French stellar nights** (“Nuits des étoiles”) with the organisation SAFGA (Société Astronomique de France – Groupe Alsace) → Public outreach to the night sky by using my own 200 mm-telescope.
Strasbourg, France

Observing Proposals accepted

- CoI: JWST Program ID 3514, Cycle 2, NIRSPEC and MIRI, 8h48, “*Panchromatic view of an Adolescent and Frigid Jovian Exoplanet*”.
- CoI: ESO Program ID 112.25ET, VLTI-AT, GRAVITY, 4h00, “*VLTI/GRAVITY Hunt for Circumbinary Exoplanetary Systems (II)*”.
- CoI: ESO Program ID 111.24J7, VLTI-AT, GRAVITY, 4h00, “*VLTI/GRAVITY Hunt for Circumbinary Exoplanetary Systems*”.
- CoI: ESO Program ID 110.246D, VLTI-AT, PIONIER and GRAVITY, MATISSE, 16h00, “*Panchromatic characterisation and monitoring of exozodis in two planetary systems*”.
- PI: ESO Program ID 109.23F2, VLT-UT3, SPHERE, 2h00, “*Direct imaging confirmation of an*

ultracool Jupiter-like planet orbiting a nearby M-dwarf”.

- CoI: ESO Program ID 109.24J9, VLT-UT2, UVES, 1h44, “*Proving cometary delivery of exozodiacal dust*”.
- CoI: ESO Program ID 106.21VL, VLT-UT3, SPHERE, 2h00, “*Confirming a second giant planet orbiting the young solar system analogue HD95086*”.
- dPI: ESO Program ID 105.2066, VLT-UT3, SPHERE, 6h00, “*Young Solar System Analogs: Characterizing the Spectral Properties of HD95086 b*”.

Observing nights

2023/11	La Silla, T2.2, 9 nights.
2022/12	Calar Alto (remotely), T123, 3 nights, no observations possible due to bad weather.
2021/11	Paranal (remotely), VLTI-ATs PIONIER, GRAVITY, and MATISSE, 1 night, no observations possible due to bad weather
2020/02	Haute-Provence, T152, T120 and T80, 6 nights.
2019/07	Paranal, VLT-SPHERE, 0.5 night.

Organisations

since 2014 **Member of the astronomical organisation SAFGA.** Board member between January 2020 and January 2023. *Strasbourg, France.*

Awards

2019 Winner of the International Physicists’ Tournament with the team of the University of Lyon at the French scale; Second at the international scale.

Languages

French (native)
English (fluent, CAE certification C1)
Spanish, German (intermediate)
Italian, Russian (beginner)

Computer skills

Python (advanced)
Matlab (intermediate)
IDL, Fortran, C (beginner)

Publications

The list of my publications can be found here: <https://shorturl.at/eAGRS>

First author: 3 publications

- Desgrange, C., Milli, J., Chauvin, G. et al., 2023, A&A, accepted, “Planetary system architectures with low-mass inner planets: Direct imaging exploration of mature systems beyond 1 au”.
- Desgrange, C., Chauvin, G., Christiaens, V. et al., 2022, A&A, 664, A139, “In-depth direct imaging and spectroscopic characterization of the young Solar System analog HD 95086”
- Desgrange, C., Heinesen, A., and Buchert, T., 2019, International Journal of Modern Physics D, 28, 1950143, “Dynamical spatial curvature as a fit to Type Ia supernovae”

Co-author: 14 publications, including one in second author

- Matthews, E. C., Bonnefoy, M., Xie, C., et al., 2023, A&A, accepted, “The first scattered light images of HD 112810, a faint debris disk in the Sco-Cen association”
- Stasevic, S., Milli, J., Mazoyer, J., et al., 2023, A&A, 678, A8, “An inner warp discovered in the disk around HD 110058 using VLT/SPHERE and HST/STIS”
- Landman, R., Snellen, I. A. G., Keller, C. U., et al., 2023, A&A, 675, A157, “Trade-offs in high-contrast integral field spectroscopy for exoplanet detection and characterisation. Young gas giants in emission.”
- Palma-Bifani, P., Chauvin, G., Bonnefoy, M. et al., 2023, A&A, 670, A90, “Peering into the young planetary system AB Pic. Atmosphere, orbit, obliquity, and second planetary candidate.”
- Le Coroller, H., Nowak, M., Wagner K. et al., 2022, A&A, 667, A142, “Efficiently combining α CenA multi-epoch high-contrast imaging data. Application of K-Stacker to the 80 hours NEAR campaign”
- Xie, C., Choquet, E., Vigan, A., et al., 2022, A&A, 666, A32, “Reference-star differential imaging on SPHERE/IRDIS”
- Gallenne, A., Desgrange, C., Milli, J. et al., 2022, A&A, 665, A41, “Probing the innermost region of the AU Microscopii debris disc”
- Gratton, R., Keller, Diolaiti, et al., 2022, Proceedings of the SPIE, 12184, 121844F, “MedRes: a new MEDium RESolution integral field spectrograph for SPHERE”
- Boccaletti, Chauvin, Wildi, et al. 2022, Proceedings of the SPIE, 12184, 121841S, “Upgrading the high contrast imaging facility SPHERE: science drivers and instrument choices”
- Bonavita, M., Gratton, R., Desidera, S. et al., 2021, A&A, 663, A144, “New binaries from the SHINE survey”
- Asensio-Torres, R., Henning, T., Cantalloube, F. et al., 2021, A&A, 652, A101, “Perturbers: SPHERE detection limits to planetary-mass companions in protoplanetary disks”
- Gratton, R., D’Orazi, V., Pacheco, T. A. et al., 2020, A&A, 646, A61, “Investigating three Sirius-like systems with SPHERE”
- Cantalloube, F., Gomez-Gonzalez, C., Absil, O. et al., 2020, Proceedings of SPIE, 11448, 114485A, “Exoplanet imaging data challenge: benchmarking the various image processing methods for exoplanet detection”
- Le Coroller, H., Nowak, M., Delorme, P. et al., 2020, Astronomy and Astrophysics, 639, A113, “K-Stacker: an algorithm to hack the orbital parameters of planets hidden in high-contrast imaging. First applications to VLT/SPHERE multi-epoch observations”

Last modification: 30/10/2023