

Dr. Nour SKAF

Research interests : Exoplanet, Optical Instrumentation, Adaptive Optics, High Contrast Imaging, Real-Time Control, Observation and Characterisation of Extrasolar Systems, Atmospheric Characterisation, Debris Disks.

Citizenship : French. **Pronouns** : She/her/hers

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<https://nour-sf.github.io>

1 PROFESSIONAL EXPERIENCES

Assistant Professor

Institute for Astronomy, University of Hawai'i

Starting May 2026

51 Pegasi b Fellow - Heising Simons Foundation

Institute for Astronomy, University of Hawai'i

2025-present

Mentors : Michael Bottom

Postdoctoral Researcher – UC Santa Cruz

2023-present

Mentors : Rebecca Jensen-Clem, Natalie Batalha

Member of the Interdisciplinary Fellows Cohort on Data Science

2024-2025

Project : PSF-reconstruction data challenge with SEAL data

Student Researcher, Optical engineering – NASA Ames Research Center - Break-through Initiaves Foundation (Mountain View, California, USA) **Summer 2018**

Optical hardware engineering for the Toliman space telescope proposal, for Alpha Centauri.

Supervisor : Eduardo Bendek

Student Researcher, Software engineering – Subaru Telescope, NAOJ (Hawaii, USA) **2017**

The adaptive optics instruments and their real time system for exoplanets.

8 months

Supervisor : Olivier Guyon

Student Researcher, Quantum optics – Pierre Aigrain Lab, ENS Ulm (France) *Quantum cascade lasers, Tera-Hertz - Complex optical bench engineering, electronics and optronics.* **2016**

Student Researcher, Astrophysics – Birmingham University (United Kingdom) **July 2014**

Analysis of several groups of galaxies from GAMA to determine their varialization state.

Student Researcher, Astrophysics – GEPI - Observatoire de Paris (France) **June 2014**

Visible galaxies spectroscopy ; galaxies' composition, classification.

Private Tutoring in Maths and Physics

2013 to 2017

From middle school to undergraduate level.

Facilitator, Astronomy tourism - professional

Summers 2012-2013

Saint-Michel-l'Observatoire Astronomy Center, partnership with the Haute-Provence Observatory CNRS. Wide astronomy outreach activities with children and wide public, with day trainings and activities, and night observations.

2 EDUCATION

PhD in Astronomy and Astrophysics – **LESIA/Observatoire de Paris** (France) **2019-2023**

Subaru Telescope, SExAO (Hawaii, USA) *Self-optimisation of adaptive optics and characterization of exoplanetary system* ; supported by NASA grant # 80NSSC19K0336

Supervisors : Anthony Boccaletti, Olivier Guyon

Defense March 2nd 2023

PhD research visitor – **Center for Space Exochemistry data University College London** (London, United Kingdom) **2019-2023**

Mentor : Giovanna Tinetti

Carl Sagan Workshop – Virtual
Circumstellar Disks and Young Planets. **July 2021**

Masters thesis – **University College London** (London, United Kingdom) **Summer 2019**
Detecting exoplanets via direct imaging on ground-based telescope using deep learning.

Supervisors : Ingo Waldmann, Gordon Yip, Nikos Nikolaou

Summer School ARES – **ESA's Ariel Summer School** Biarritz, France
Atmospheric characterisation of exoplanets for the Ariel space mission **October 2019**

Doctoral school training – **Artificial Intelligence for Astrophysics** Virtual

MSc – **Imperial College London** London, United Kingdom
Fondamental Physics masters **September 2019**
Scientific : Authoring a literature review on the origin of hot Jupiters - Supervisor : James Owen.
Entrepreneurship for physicists : Inventing, designing and building the first prototype of a gaze-orientable head lamp for medical use.

Engineering degree – **Institut d'Optique Graduate School** Palaiseau, France
Optics and Photonics **September 2019**

Summer School in Adaptive Optics – **Santa Cruz University**
Santa Cruz, USA **August 2017**

BSc – **Université Pierre et Marie Curie (UPMC) - Sorbonne, PSL** Paris, France
Fundamental Physics **September 2015**

French Baccalaureate, Physics major passed with honors – Cavaillon, France **2012**

3 GRANTS & AWARDS

Private donation for research and DEI-related work \$10,000	2024
L'Oréal-UNESCO prize for Women in Science - Young Talent France 15,000€(35 awardees per year)	2021
OCAV Doctoral Research Fellowship (Origins and Conditions of Apparition of Life) Ph.D. grant, 3-year funding (3 awarded nation-wide across various disciplines)	2019
Grant from the Astrobiology Center of Japan for two international conferences (\$3k)	2019
University scholarship of the Institut d'Optique Graduate School – 2 years	2015-2016
Winner of the competition " Speed Science " of the French Academy of Sciences	2014
University scholarship from Sorbonne University for an international internship (500€)	2014

4 ACADEMIC TEACHING

Selection of lecture talks and teachings

- Co-instructor for the Stellar Physics class, UCSC **Winter 2025**
- *Control Theory*, AO Summer School, CfAO UCSC **August 2024**
- Mentor for UCSC's Science Internship Program (**SIP**) : supervising five international high school students from underrepresented countries for seven weeks. **Summer 2024**
- *Direct imaging of exoplanet*, Ariel summer school, Biarritz France **October 2021**
- *Direct imaging*- Invited lecturer in G. Tinetti's exoplanet course at UCL, UK. **February 2021**
- *Exoplanets and Ocean Worlds*- Invited lecturer in oceanography, Diablo Valley College, CA. **March 2021**

5 OUTREACH & SERVICE

Over 150 outreach talks with various associations, cultural centers, universities and schools in 10+ countries.

***Astronomy for All* - education and access to science in emerging countries, as a starting point for education, technological development, and peace-building within communities and across countries.**

Full time focus on astronomy and space sciences outreach, communication on citizen science projects, and work with research and educational institutions, foundations, and governmental institutions. Concrete actions in DR Congo, Cameroon, Rwanda, Bhutan, Thailand, Costa Rica. 5000+ students. Mentoring closely 8 students.

Funding sources : Breakthrough Initiatives Foundation, McDonald Institute, African Institute for Mathematical Sciences, Investing in People Association, and more. **March to September 2023**

Outreach Mission in French Guiana

Guiana to the Stars

3 weeks of outreach in French Guiana : activities in several schools throughout the state, public talks,

and amateur night observations, on the opportunity of the James Webb space telescope launch. In total with 9 other astronomers, we met 5000+ people, including : 3600 students, 186 classrooms, 30 schools. 54 school teachers were trained on teaching astronomy. 12 public conferences, 1300+ people.
December 2021

2-Day outreach in Moloka'i in two public and private schools, with the "Creating Equity in STEAM" organization.
November 2024

Selection of outreach talks

- Opening talk for the NASA Space App challenge in DR Congo (remote) **October 2024**
- *Exoplanets : Bridging Worlds, Broadening Horizons*, Lick Observatory **July 2024**
- *Exoplanets : a cosmic odyssey*- Texas Eclipse Festival. **April 2024**
- *A human approach to the JWST images*- Star's Up space festival, Meudon, France. **September 2022**
- *Why explore space ?* - association "Jeunes IHEDN" (Institute of Advanced Studies in National Defence). **April 2021**

Professional service

- Reviewer for the Astrophysical Journal. **2023**
- Chair of the astronomy session at the CEC 2024 Conference **September 2024**
- Chair of the Real-Time Control session at the CfAO Fall Retreat **November 2024**

Diversity equity and inclusion (DEI) service

- DEI UCSC postdoc representative in the Astronomy department **2024-2025**
- Facilitator of women circles : ~ 150 women, mainly in Africa and Asia ; **Since 2023**
- Member of the 2024 Yokohama SPIE conference DEI board, leading a workshop : "Astronomy for All : highlights of science and tech development in emerging countries" ; **June 2024**
- FLASH Talk at UC Santa Cruz "How to develop science and technology in emerging countries - a few African and Southeast Asian examples". **May 2024**
- Volunteer mentor through the French program dema1n.org that connects professionals with young adults for their professional development. **since 2023**
- Journey Through The Universe, Big Island. **2018, 2021, 2022**

Selected media coverage

- Featured in University of Hawai'i's News [link](#).
- Featured several times in the La Provence French Newspaper ([link 1](#), [link 2](#)).
- Featured in the Le Dauphiné French Newspaper [link 1](#).
- Featured in the CNRS French Research News page [link 1](#).
- Featured in RFI Brazil [link 1](#).
- Research results featured in [Sci News](#), [NASA](#), [Discover Magazine](#), [Spaceref.com](#), and more.
- Featured in The Double Blind Magazine about the 2024 total eclipse ([link](#)).

6 Observing experience

~ 3 years of engineering and science nights with the SCEXAO instrument at the Subaru Telescope.

Accepted proposal :

- HD 149162 and LkCa 15 "Investigating planet formation in two benchmark transitional disks" (PI : N. Skaf, S21B)

7 SCIENTIFIC CONFERENCES

Conference talks

- Congresso Espacial Centroamericano, Guatemala - September 2024, “Stars and exoplanets for All : Citizen Science and the Democratization of Astronomy at a time of climate change.”
- Other World Laboratories Summer Program, UCSC - July 2024 “DrWHO and real-time control - seeing the invisible.”
- Congresso Espacial Centroamericano - September 2023, Costa Rica : “Astronomy and space for all - how to develop science and technology in emerging countries : a few African and Southeast Asian examples. ”
- SPIE Astronomical Telescope + Instrumentation - Montreal - July 2022 “Imaged-based adaptive optics wavefront sensor referencing for high contrast imaging.”
- Lyot Conference - Leiden - July 2022 “High contrast imaging wavefront sensor referencing from coronagraphic images.”
- Wavefront sensing in the VLT/ELT era VII - Dec 2021 “High contrast imaging wavefront sensor referencing from coronagraphic images.”
- SPIE Optics and Photonics - Techniques and Instrumentation for Detection of Exoplanets X - Aug 2021 “High contrast imaging wavefront sensor referencing from coronagraphic images.”
- Direct Imaging Tech Talk Feb. 2021 : “Image-base adaptive optics wavefront sensor referencing : a method to compensate NCPA”
- ARES Day - Nov 2020 : “Diaries from TauREx.”
- Ariel Consortium Meeting Oct. 2020 : “Unveiling the atmospheric compositions of the hot Jupiters WASP-127b, WASP-79b, WASP-62b.”
- WFS 2020- Oct. 2020 : “Dr WHO : a self-automatisation algorithm for high contrast imaging.”
- EPSC Sept. 2020 : “ARES. II. Characterizing the Hot Jupiters WASP-127 b, WASP-79 b, and WASP-62b with the Hubble Space Telescope”

Journal Club

- LESIA’s Astro-café : “Introduction to Machine Learning and Pushing the limits of exoplanets discovery via Direct Imaging.”

Initiator & organiser of the 1st international workshop on AI for AO - 3 days May 2020 : 40 participants, 9 universities worldwide.

8 ASSOCIATIONS, HOBBIES, LANGUAGES

Associations : French Association of Women and Sciences ; French Society of Astronomy ; Space Bus France. Honorary member of the association ”Guyane Astronomie”.

Travels : Europe, Asia, Africa, North, Central and South America, Oceania. ~50 countries.

Photography : *landscapes and night sky pictures.*

Languages : French (mother tongue). English (bilingual). Spanish, Italian, Arabic (beginner to intermediate).

Hobbies : Yoga teacher in training. Outdoor sports, scuba diving (PADI open water), free diving, surfing, philosophy.