Khaled Al Moulla

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Positions

Since 2025 **SNSF Postdoctoral Fellow**
Center for Astrophysics at the University of Porto (CAUP), Portugal

2024 – 2024 **Postdoctoral Researcher**
University of Geneva, Switzerland

2020 – 2024 **Research and Teaching Assistant**
University of Geneva, Switzerland

Education

2020 – 2024 **PhD in Astronomy and Astrophysics**
University of Geneva, Switzerland
Supervisor: Prof. Xavier Dumusque
Thesis: Pathways Toward a Physical Understanding of Solar-type Variability in EPRVs

2018 – 2020 **MSc in Physics**
Uppsala University, Sweden
Supervisor: Prof. Nikolai Piskunov
Thesis: Advanced Characterization of Exoplanet Host Stars

2015 – 2018 **BSc in Physics**
Uppsala University, Sweden
Supervisor: Dr. Lina Hadid
Thesis: Turbulence at MHD and Sub-Ion Scales in the Magnetosheath of Saturn

Fellowships & Grants

2025 – 2027 **Swiss National Science Foundation (SNSF) Postdoc.Mobility Fellowship**
CHF 108,000 ≈ USD 123,000

2024 **Swiss Society for Astrophysics and Astronomy (SSAA) Travel Grant**
CHF 1,000 ≈ USD 1,100

2020 **F. O. Törnlund Foundation Scholarship**
SEK 26,000 ≈ USD 3,000

2018 – 2019 **A. & A. Löfberg Foundation Scholarship**
SEK 100,000 ≈ USD 11,000

Instrumentation

Consortia

Since 2025 **Paranal solar ESPRESSO Telescope (PoET)**
Member of Science Team

Since 2023 **Near-InfraRed Planet Searcher (NIRPS)**
Member of Science Team

Proposals

2024 **INAF AOT49**
Co-Investigator, Telescope: TNG, Time: 16.0 h

2022 **ESO P111**
Co-Investigator, Telescope: VLT, Time: 33.3 h

Observations

2024 **ESO 3.6m Telescope**
Nights: 7, Instruments: HARPS and NIRPS

2021 – 2024 **Swiss Euler 1.2m Telescope**
Nights: 44, Instruments: CORALIE and NECAM

Services

Committees

Since 2025 **Extreme Stellar Signals Project (ESSP)**
Member of Executive Committee
Organizing and Coordinating Data Challenges

2023 **JUnior Researchers' Assembly (JURA) IV**
Member of SOC/LOC
Participants: 47, Budget: CHF 32,000 $\approx$ USD 35,000

Diversity, Inclusion and Equity

2022 – 2024 **DEI Group, Geneva Observatory**
Member of Committee

Teaching

Courses

2023 – 2024 **Astrophysics and Data Science**
Teaching Assistant
University of Geneva, Master's Level Course

Master's Theses

2023 – 2024 **Romain Eltschinger**
University of Geneva, co-supervised with Jeanne Davoult (University of Bern)

Talks

8 conferences, 5 science meetings, 3 invited seminar, 5 campus seminars.

Conferences (selected)

2024 **PoET Workshop #2**, CAUP, Porto, PT
Small-Scale Magnetic Field Proxies in the Optical and Near-Infrared

Exoplanets 5, Stadsgehoorzaal, Leiden, NL
Characterizing Solar-Type Activity with HELIOS

2023 **EPRV 5**, Hilton Beachfront Resort, Santa Barbara, US
Formation Temperature-Dependent Stellar Activity RVs Across Spectral Types

Sun-as-a-Star Workshop, Flatiron Institute, New York City, US
Introducing ARVE: Analyzing Radial Velocity Elements &
Which Spectral Segments are Optimal for Radial Velocity Extraction?

PoET Workshop, CAUP, Porto, PT
Understanding the Physics of Stellar Activity at the Spectral Level

2022 **GPRV Workshop**, All Souls College, Oxford, UK
Radial Velocity Dependence on Line Formation Temperature

Posters

2 conferences, 2 science meetings.

Conferences

2023 **Spectral Fidelity**, Istituto degli Innocenti, Florence, IT
NIRPS Sun-as-a-Star Observations

2022 **Cool Stars 21**, Pierre Baudis Centre, Toulouse, FR
Dependence of Solar Activity Signals on the Formation Temperature of Spectral Lines

Publications

A complete list is available on my ADS Public Library.

First Author

3. Al Moulla et al. 2024, A&A, 683, A106
   Measuring precise radial velocities on individual spectral lines. IV.
   Stellar activity correlation with line formation temperature
2. Al Moulla et al. 2023, A&A, 669, A39
   Stellar signal components seen in HARPS and HARPS-N solar radial velocities
1. Al Moulla et al. 2022, A&A, 664, A34
   Measuring precise radial velocities on individual spectral lines. III.
   Dependence of stellar activity signal on line formation temperature

Second & Third Author

1. Rescigno & Al Moulla 2025, MNRAS, 536, 3601
   Gaussian process regression of temperature-dependent radial velocities

Coauthor

10. Zhao et al. 2025, A&A, 693, A262
    Precise and efficient modeling of stellar-activity-affected solar spectra using SOAP-GPU
9. Marchenko et al. 2024, ApJ, 977, 33
   Sun-as-a-Star Spectral Line Variability in the 300–2390 nm Wavelength Range
8. Bourrier et al. 2024, A&A, 691, A113
   The ANTARESS workflow: I. Optimal extraction of spatially resolved stellar spectra with high-resolution transit spectroscopy
7. Siegel et al. 2024, AJ, 168, 158
   Quiet Please: Detrending Radial Velocity Variations from Stellar Activity with a Physically Motivated Spot Model
6. Malo et al. 2024, SPIE, 13096, 1309646
   NIRPS near-infrared spectrograph: AITV phase at ESO3.6m/La Silla
5. Artigau et al. 2024, SPIE, 13096, 130960C
   NIRPS first light and early science: breaking the 1 m/s RV precision barrier at infrared wavelengths
4. Klein et al. 2024, MNRAS, 531, 4238
   Investigating stellar activity through eight years of Sun-as-a-star observations
3. Palumbo et al. 2024, AJ, 168, 46
   GRASS. II. Simulations of Potential Granulation Noise Mitigation Methods
2. Jones et al. 2024, A&A, 683, A192
   A long-period transiting substellar companion in the super-Jupiter-to-brown-dwarf mass regime and a prototypical warm-Jupiter detected by TESS
1. Zhao et al. 2023, AJ, 166, 173
   The Extreme Stellar-signals Project. III. Combining Solar Data from HARPS, HARPS-N, EXPRES, and NEID

Submitted & In Preparation

9. Al Moulla, in preparation
   ARVE: Analyzing Radial Velocity Elements. I. The Code
8. Al Moulla et al., in preparation
   Stellar variability tracers in the optical and near-infrared. I. Unsigned magnetic flux proxy from solar disk-integrated, high-resolution intensity spectra observed with HARPS-N, HARPS, and NIRPS
7. Allart et al., submitted to A&A
   NIRPS detection of delayed atmospheric escape from the warm and misaligned Saturn-mass exoplanet WASP-69 b
6. Bazinet et al., submitted to A&A
   NIRPS quantifies the extent of thermal water dissociation in the dayside photosphere of the ultra-hot Jupiter WASP-121 b
5. Bouchy et al., submitted to A&A
   NIRPS joining HARPS at the ESO 3.6m: On-sky performance and science objectives
4. Mercier et al., submitted to A&A
   Studying the variability of the He triplet to understand the detection limits of evaporating exoplanet atmospheres
3. Suárez Mascareño et al., submitted to A&A
   Diving into the planetary system of Proxima with NIRPS: Breaking the meter per second barrier in the infrared
2. Vaulato et al., submitted to A&A
   Hydride ion continuum hides absorption signatures in the NIRPS near-infrared transmission spectrum of the ultra-hot gas giant WASP-189b
1. Ulmer-Moll et al., in preparation
   TOI-2449 b: a 106-day transiting warm Jupiter uncovered with NGTS and HARPS