Stefano Bellotti

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https://sbellotti.github.io/index.html

Current position

2020 - present — Ph.D. student at the Institut de Recherche en Astrophysique et Planétologie (IRAP), Université Toulouse III - Paul Sabatier, Toulouse, France

Title: "Searching new worlds with SPIRou: tackling stellar activity"

Supervisors: Pascal Petit (IRAP), Julien Morin (LUPM), Gaitee Hussain (ESTEC-ESA)

Expected defence date: 1st June 2023

2022 - present — Visiting trainee researcher at European Science and Technology Research Centre (ESTEC-ESA)

Education

2017 - 2019 — MSc in Astrophysics, Niels Böhr Institute, University of Copenhagen, Denmark.

Title: "Stellar activity induced detection limits for habitable zone planets around a representative sample of known planet hosts"

Supervisor: Heidi Korhonen

2013 - 2017 — BSc in Physics, Physics Department, University of Pavia, Italy.

Title: "Measurement of Planck's constant for didactic purposes: comparison of possible methodologies"

Supervisor: Anna de Ambrosis

Publications

Bellotti S., Fares R., Vidotto A., et al., "The large-scale magnetic field and stellar wind environment of the exoplanet host M dwarf GJ 436", Astronomy & Astrophysics, in prep.

Bellotti S., Morin J., Lehmann L., et al., "Monitoring the magnetic field of AD~Leo with SPIRou, ESPaDOnS and NARVAL: Towards a magnetic polarity reversal?", Astronomy & Astrophysics, in prep.

Fouque P., +4 others, **Bellotti S**., +18 others "The SPIRou Legacy Survey. Rotation period of quiet M dwarfs from circular polarization in near-infrared spectral lines: I. The SPIRou APERO analysis", Astronomy & Astrophysics, in prep.

Carmona A., Delfosse X., **Bellotti S.**, +36 others "Near-IR and optical radial velocities of the active M-dwarf star Gl~388 (AD~Leo) with SPIRou at CFHT and SOPHIE at OHP: A 2.23 days rotation period and no evidence for a co-rotating planet", Astronomy & Astrophysics, submitted

Cortes-Zuleta P., +10 others, **Bellotti S.**, +7 others, "Optical and near-infrared stellar activity characterization of the early M dwarf Gl 205 with SOPHIE and SPIRou", Atronomy & Astrophysics, submitted

Martioli E., +5 others, **Bellotti S.**, +53 others, "TOI-1759 b: a transiting sub-Neptune around a low mass star characterized with SPIRou", Astronomy & Astrophysics, 660, A86.

Bellotti S., Petit P., Morin J., et al., "Mitigating stellar activity jitter with different masks for least-squares deconvolution: Analysis of a parametric and a randomised line selection", 2022, Astronomy & Astrophysics, 657, A107.

Bellotti S. and Korhonen H. "Simulating starspot activity jitter: realistic estimates for a representative sample of known F--M exoplanet hosts", 2021, Astronomische Nachrichten, 342:926-940.

Bellotti S., Zabludoff A., Belikov R., Guyon O., Rathi C. "Detecting Exoplanets Using Eclipsing Binaries as Natural Starshades", 2020, The Astronomical Journal, 160, 131.

Observing experience and proposals

-PI of HARPS-Pol@La Silla ESO proposal for 16 hours in semester P110.
-PI of SPIRou and ESPaDOnS@Canada-Hawaii-France proposal for 26.7 hours in semester 2022B.
-PI of SPIRou@Canada-Hawaii-France proposal for 7.2 hours in semester 2021B.
-PI of NEO-NARVAL@Telescope Bernard-Lyot proposal for 119.8 hours in semester 2021A.

Nov 2021	Service mode operation for 8 nights at Telescope Bernard-Lyot.
Aug 2018	MSc course "Observational Astronomy": observing, data reduction with IRAF and analysis for 7 nights at Nordic Optical Telescope, La Palma, Spain.

Conference participation

Aug 2022	Presentation at the IAU General Assembly 2022, Busan, South Korea, with the title: "*Near-infrared long-term monitoring of AD Leo with SPIRou: towards a magnetic polarity reversal?*".
Jul 2022	Poster presentation at the CoolStars21 conference, Toulouse, France, with the title: "*Is AD Leo entering a polarity reversal? Long-term monitoring of the large-scale magnetic field with ESPaDOnS, NARVAL and SPIRou*".
Jun 2022	Presentation at the Lorentz workshop 'Life Around a Radio Star', Leiden, Netherlands, with the title: "*Magnetic fields of M dwarfs and stellar activity filtering techniques*".
Jun 2022	Talk and proceedings contribution to the ESO Hypatia Colloquia 2022 edition, online, with the title: "*Mitigating stellar activity using line selections for Least-Squares Deconvolution*".
May 2022	Poster presentation at the EXOPLANET IV conference, Las Vegas, US, with the title: "*Mitigating stellar activity jitter with a parametric and a randomised line selection for least-squares deconvolution*".
Oct 2021	Poster presentation at the Star-Planet Connection online conference with the title: "*Simulating starspot activity jitter for spectral types F–M: realistic estimates for a representative sample of known exoplanet hosts*".
Mar 2021	Poster presentation at the CoolStars20.5 online conference with the title: "*Spectropolarimetry in optical and near-IR for EV Lac and AD Leo: what is stellar activity's favourite colour?*".

Aug 2020	Presentation at the Lunar and Planetary Laboratory Conference, Tucson, Arizona, US (held online) with the title: "*Detecting Extrasolar Planets Using Eclipsing Binaries as Natural Starshades*".
May 2019	Poster presentation at the Annual Danish Astronomy Meeting, Nyborg, Denmark with the title: "*Hunting exoplanets: detection limits due to starspots*".

Scientific formation work

Feb 2022 - Present	Involved in the LOC of the Planet ESLAB 2023 conference to be held at ESA-ESTEC, Noordwijk, The Netherlands.
Apr 2022	Co-chair of the Holland-Area Exoplanet Science Meeting (HAESM), a one-day event held in hybrid format at ESTEC-ESA, Noordwijk, Netherlands.
Dec 2020 - May 2021	Member of the organizing team of the "Ph.D. Day 2021": a one-day event dedicated to Ph.D. students to showcase their research and foster collaborations. Held online, Toulouse, France.
Sep 2020 - Dec 2020	Member of the editing team of the "*Newcomer's guide at IRAP*": a problem-solving document to describe all aspects of the Ph.D. student's life at IRAP, Toulouse, France.

Coding

Python	Upper intermediate: cluster usage and astronomical packages (AstroPy, PyRAF, Pyfits, Astroquery)
C++	Basic (didactic) level
Office suite	Upper intermediate

Languages

Italian	Native
English	Fluent in both spoken and written (IELTS level C1, 2017)
French	B1