

Dr. Aaron Labdon

ESO FELLOW · EUROPEAN SOUTHERN OBSERVATORY

Alonso de Cordova 3107, Vitacura, Santiago

✉ aaronlabdon@gmail.com | 🏠 www.mywebsite.com | 🐦 @AstroAaronL

Academic Career

European Southern Observatory

Santiago, Chile

ESO FELLOWSHIP

2021/08 - present

- 4 year fellowship position, 50% science/50% duty work supporting paranal observatory, specifically VLTI.

University of Exeter

Exeter, UK

PHD ASTROPHYSICS

2017/07 - 2021/06

- Advisors: Prof. Stefan Kraus & Prof. Tim Harries
- Title: The Inner Astronomical Unit of Protoplanetary Disks

University of Aberystwyth

Aberystwyth, UK

BSC & MASTERS IN PHYSICS WITH ASTROPHYSICS

2013/08 - 2017/05

- Thesis Supervisors: Dr. Anthony Cook & Dr. Florian Kirchslager
- Thesis Title: Modelling of Single Dust Grain Motions within Debris Disks
- BSc Dissertation Title: Differential Solar Spectroscopic Imaging

Professional Experience

- 2021-Present **ESO Fellowship**, European Southern Observatory
- 2017-2021 **Postgraduate Teaching Assistant**, University of Exeter, UK - supporting undergraduate classes and lectures
- 2016-2017 **Private Tutor**, Tutoring secondary school pupils in Maths, Physics and Chemistry
- 2014-2015 **Customer Service Advisor**, Metalliform Holdings, UK - Customer service and sales position at large manufacturer of furniture
- 2013-2014 **Alumni Relations and fundraising**, Aberystwyth University, UK - Short term fundraising campaign from university alumni

Publications

FIRST AUTHOR PUBLICATIONS

Labdon, A., et al. (2021) "Imaging the warped dusty disk wind environment of SU Aurigae with MIRC-X" A&A (2023)

Labdon, A., et al. (2021) "Viscous heating in the disk of the outbursting star FU Orionis", A&A, 646, A102

Labdon, A., et al. (2020) "A new frontier for J-band interferometry: dual-band NIR interferometry with MIRC-X", SPIE, 11446, 114460H

Labdon, A., et al. (2019) "Dusty disk winds at the sublimation rim of the highly inclined, low mass young stellar object SU Aurigae", A&A, 627, A36

IN PREP

Labdon et al. "EXor Outburst Caught in Action with XSHOOTER, the case of GAIA23bab"

Labdon et al. "The Thermal and Geometric Structure of the Inner Disk of FUor object"

CO-AUTHORED PUBLICATIONS (PAST 3 YEARS)

nugu, N., et al. (2023) "Three-dimensional orbit of AC Her determined: Binary-induced truncation cannot explain the large cavity in this post-AGB transition disk", arXiv, arXiv:2305.02408

- Bourdarot, G., et al. (2023) "FU Orionis disk outburst: evidence for a gravitational instability scenario triggered in a magnetically dead zone", arXiv, arXiv:2304.13414
- Ibrahim, N., et al. (2023) "Imaging the Inner Astronomical Unit of the Herbig Be Star HD 190073", ApJ, 947, 68
- Lanthermann, C., et al. (2023) "Multiplicity of northern bright O-type stars with optical long baseline interferometry. Results of the pilot survey", A&A, 672, A6
- Torres, G., et al. (2022) "The Orbits and Dynamical Masses of the Castor System", ApJ, 941, 8
- Lester, K. V., et al. (2022) "Visual Orbits of Spectroscopic Binaries with the CHARA Array. IV. HD 61859, HD 89822, HD 109510, and HD 191692", AJ, 164, 228
- Klement, R., et al. (2022) "Dynamical Masses of the Primary Be Star and Secondary sdB Star in the Single-lined Binary Kap Dra (B6 IIIe)", ApJ, 940, 86
- Gardner, T., et al. (2022) "ARMADA. II. Further Detections of Inner Companions to Intermediate-mass Binaries with Microarcsecond Astrometry at CHARA and VLTI", AJ, 164, 184
- Zarrilli, S. A., et al. (2022) "Characterising the orbit and circumstellar environment of the high-mass binary MWC 166 A", A&A, 665, A146
- Caballero, J. A., et al. (2022) "A detailed analysis of the Gl 486 planetary system", A&A, 665, A120
- Davies, C. L., et al. (2022) "Scattering and sublimation: a multiscale view of um-sized dust in the inclined disc of HD 145718", MNRAS, 511, 2434
- Klement, R., et al. (2022) "Interferometric Detections of sdO Companions Orbiting Three Classical Be Stars", ApJ, 926, 213
- Thomas, J. D., et al. (2021) "The orbit and stellar masses of the archetype colliding-wind binary WR 140", MNRAS, 504, 5221
- Klement, R., et al. (2021) "Nu Gem: A Hierarchical Triple System with an Outer Be Star", ApJ, 916, 24
- Gardner, T., et al. (2021) "ARMADA. I. Triple Companions Detected in B-type Binaries Alp Del and Nu Gem", AJ, 161, 40

Presentations

TALKS/PRESENTATIONS

- 2023/05 *Inner Disk View of Variable Accretion with Optical Interferometry* Contributed Talk: Conference 'The inner disk of young stars : accretion, ejection, and planet formation' Corsica, France
- 2023/05 *Inner Disk View of Variable Accretion with Optical Interferometry* Seminar Talk, University of Exeter, UK
- 2022/10 *Variable Accretion in Protoplanetary Disks* Contributed Talk, Conference 'Accretion/Ejection Processes in Star Formation: In Theory and in Practice' ESO, Chile
- 2022/06 *Variable Accretion Planet Forming Disks* Seminar Talk: Jets and Accretion Disks Study Group, Santiago, Chile
- 2021/11 *An Introduction to FU Orionis Objects* Stellar-Coffee Talk: ESO, Chile
- 2021/11 *The Inner Astronomical Unit of Protoplanetary Disks* Seminar Talk: Christian-Albrechts-Universität zu Kiel, Germany
- 2021/05 *The Inner Astronomical Unit of Protoplanetary Disks* Seminar Talk: University of Exeter, UK
- 2020/05 *A new frontier for J-band interferometry: dual-band NIR interferometry with MIRC-X*, Contributed Talk: SPIE Astronomical Telescopes + Instrumentation, online
- 2018/03 *Sublimation fronts in the highly inclined disk of the T-Tauri star SU Aurigae* Contributed Talk: CHARA Annual Science Meeting

POSTERS

- 2023/06 *Inner Disk View of Variable Accretion with Optical Interferometry* Poster+Poster Presentation: Conference 'Star Formation in the era of JWST'

Accepted PI Observing Proposals

60.A-9137	Resolving Disk Misalignments and Individual Geometries of the Unique Edge-on System PDS 144 , 3 hrs	ESO, PIONIER
M28/NOIR11	Spatially Resolving the Inner Disk of FU Ori stars , 1.5 nights	CHARA, MIRCX/MYSIC
110.242N	Uncovering the Inner Disk of 2 Little Studies FU Orionis Objects , 6 hrs	ESO, GRAVITY
110.243C	Resolving a Complete Sample of planet Forming Disks , 92 hrs	ESO, GRAVITY
111.263U	Accretion Outburst in a candidate EX Lup star: GAIA23bab , 1 hr	ESO, XSHOOTER, DDT

Professional Development

2022-Present	ESO Fellow Representative , This elected position serves to represent the collective interests of fellows across a range of matters including direct discussions with upper management. We work closely as a team of representatives, 2 from Garching and 3 from Vitacura.
2023-Present	IT User Group Representative , ESO IT User Group (ITUG) representative for the directorate for science in Vitacura. This group acts as an interface between users and the IT department to implement changes to IT systems and provide feedback to fix issues presented by users.
2022/10	Summer School LOC and Lecturer , 'VLTI-HOW' school ESO, Chile - Served as a member of the LOC to organise the 2 week workshop for South American early careers researchers to teach VLTI techniques to the community. Also served as a lecturer and tutor during the workshop
2022/11	Conference LOC , 'Accretion/Ejection Processes in Star Formation: In Theory and in Practice' 3 day conference at ESO, Chile. Served as a member of the LOC organising the meeting over several months as part of a team
2022/04	Conference LOC , 'Sharpest Eyes in the Sky' 5 day conference in Exeter, UK. Deeply involved as a member of the organising committee, with multiple roles

Skill and Attributes

- I am a widely accomplished and practiced observer, having operated the MIRCX and MYSTIC instruments at CHARA during my PhD (approximately 15 nights a year). During the part years as an ESO fellow I have served as a VLTI astronomer conducting service and visitor mode observations on PIONIER, MATISSE and GRAVITY, including challenging galactic centre observations with VLTI-UTs. I have also received training on UT3 instruments across several nights and can operate XSHOOTER, CRIRES and SPHERE comfortably. These experiences have given me a deep understanding of observatory operations and techniques, in addition to allowing me to contribute to a more efficient and improved observatory service.
- I have a wealth of instrumentation experience. In particular from membership of the MIRC-X consortium during my PhD and to a less extent still continuing to present. This includes the commissioning and alignment of instruments during extensive MIRC-X upgrades. In addition, I have led an instrumentation project to expand the operation wavelength of MIRC-X to include the J band, which resulted in the first ever published J band interferometric results.
- I am proficient in both Python and Fortran programming languages and have experience working in C. This is across all main operating systems. This is evidenced recently in my work as part of the SCUBA team, where I am leading the project to bring the data visualisation and automatic grading to the VLTI for the first time.
- As a teacher/demonstrator during my PhD I developed a range of teaching skills in undergraduate physics lab-

oratory modules and as a personal tutor to undergraduates.

- Science communication and outreach is a passion of mine and I regularly run talks and workshops for the wider public, including school visits and international science festivals. Although this has been difficult to achieve during the past 2 years given my limited Spanish, I am still involved as evidence from the VLT1-HOW school to teach VLT1 techniques to the South American community.