

# CURRICULUM VITAE

Iva Karovicova

Web : <http://www.ita.uni-heidelberg.de/~ikarovic>  
E-mail: [iva.karovicova@gmail.com](mailto:iva.karovicova@gmail.com)

## MAJOR RESEARCH ACHIEVEMENTS

- **Karovicova et. al A&A 2013** conducted a long-term interferometric observations of extended atmospheres of oxygen-rich AGB stars and investigated a poorly understood dust formation process. This is the most extensive study to date, which for the first time resolved the dust forming layers and presented the possible dust forming scenario in oxygen-rich AGB stars. The results were subsequently confirmed by theoretical models.
- **Karovicova et. al A&A 2018** precisely determined effective temperatures ( $T_{\text{eff}}$ ) for three scientifically highly important stars with very low metallicities and resolved a long standing puzzling discrepancies between interferometric and spectroscopic  $T_{\text{eff}}$  values.

## RESEARCH POSITIONS

- 2018 – **Postdoctoral Fellow**  
**German Research Foundation (DFG) — Principal Investigator Fellowship**  
LSW, University of Heidelberg
- 2014 – 2016 **Postdoctoral Fellow**  
**German Research Foundation (DFG) — Principal Investigator Fellowship**  
Institute of Theoretical Astrophysics (ITA), University of Heidelberg
- 2011 – 2014 **Postdoctoral Fellow** — Max Planck Institute für Astronomie (MPIA)
- 2008 – 2011 **Doctoral Student** — European Southern Observatory

(Time between the positions was filled by EXCHANGE RESEARCH VISITS. Visits and fellowships were funded by my AWARDS.)

## EXCHANGE RESEARCH VISITS

- 2017 - 4 months **Visiting Scientist** — LSW, University of Heidelberg
- 2014, 2017 - 7 months **Visiting Scientist** — Institute of Astronomy (IoA), University of Cambridge
- 2013, 2014 - 2 months **Visiting Scientist** — Cavendish Astrophysics Group, University of Cambridge
- 2011 - 3 months **Visiting Scientist** — European Southern Observatory (ESO)
- 2007 - 3 months **Visiting Scientist** — Laboratoire Hyppolite Fizeau at Université de Nice

## AWARDS & FUNDING

- 2022 **DFG German Research Foundation - Principal Investigator Fellowship KA 4055/6/3**
- 2018 **DFG German Research Foundation - Principal Investigator Fellowship KA 4055/6/1**
- 2016 **Research Fellowship for International Collaboration KA 4055/4-1**
- 2015 **European Science Foundation (ESF)**  
**GREAT Gaia Research for European Astronomy Training**
- 2014 **DFG German Research Foundation - Principal Investigator Fellowship KA 4055/1/1**
- 2014 **European Science Foundation (ESF)**  
**GREAT Gaia Research for European Astronomy Training**
- 2013 **Fizeau Exchange Fellowship in Optical Interferometry**
- 2008 **European Southern Observatory Studentship (ESO)**
- 2007 **Fizeau Exchange Fellowship in Optical Interferometry**
- 2005 **Joint European Master in Space Science and Technology Studentship**

## EDUCATION

- 2011 **Ph.D. in Astrophysics — European Organisation for Astronomical Research in the Southern Hemisphere (ESO), Germany**  
Thesis Title: *“Multiepoch infrared interferometric observations of evolved stars at the VLTI”*  
Thesis Advisor: Dr. Markus Wittkowski (ESO)  
*the research fully carried out in ESO, the official Ph.D. degree granted by*  
**Laboratoire Hyppolite Fizeau, Université de Nice Sophia Antipolis (LUAN), France**
- 2007 **M.Sc. in Astrophysics — University Paul Sabatier Toulouse, Laboratory of Astrophysics, Toulouse, France**  
*“Determination of large scale velocity fields at the Sun surface from granule tracking*
- 2007 **M.Sc. in Space Sciences & Space Technologies — Lulea University of Technology - Department of Space Science at Kiruna Space Campus, Sweden**
- 2003 **M.Sc. in Physics — Faculty of Nuclear Science and Physical Engineering (FJFI), Prague, Czech Republic (including undergraduate)**

## TEACHING AND ADVISING

- 2013 - 2015 **Co-advising Graduate Research** – Belén Arroyo Torres (Valencia, Spain)
- 2013 - 2015 **Co-advising Graduate Research** – Rodrigo Andres Leiva Espinoza (Santiago de Chile, Chile)
- 2000 - 2003 **Teaching Assistant (Physics & Mathematics)** — FJFI, Czech republic
- 2000 - 2003 **Teaching Assistant (Laboratory courses)** — FJFI, Czech republic

## PROFESSIONAL ACTIVITIES & AFFILIATIONS

- 2021 - present IAU Member of Division G Stars and Stellar Physics
- 2020 - present MNRAS referee
- 2019 Emerging Field Grant grant referee
- 2016 - present A&A referee
- 2015 PhD committee member (Belén Arroyo Torres)
- 2015 - present Member of 4 MOST - IWG7 group
- 2013 - present Member of the Gaia ESO-Survey team - Co-Investigator
- 2011 - present Member of the MIDI Science Group
- 2010 - present Member of the Czech Astronomical Societies
- 2010 Member of the Instrument Operation Team AMBER
- 2010 Local Organizing Committee member for the *“The Origin and Fate of the Sun: Evolution of Solar-mass Stars Observed with High Angular Resolution”* Munich, Germany
- 2008 - 2009 Panel Assistant for the European Southern Observing Programmes Committee

## OUTREACH ACTIVITIES & AFFILIATIONS

- 2017 - present Astronomy on tap - (*Head of Heidelberg section - worldwide monthly event*)
- 2017 - present Pint of science - (*event/city manager & presenter- worldwide event*)
- 2018 Science Slam - MPIA, DE
- 2016 Girls in science - Cambridge, UK
- 2015 - present Gaia activities
- 2012 - 2014 Coordinator of Student Guided tours for House of Astronomy
- 2013 MPIA Open Days
- 2009 & 2010 ESO Open Days
- 2010 - 2011 Member of the ‘Galileo Project’
- 2000 - 2003 Member of the Outreach Department at the FJFI

## SUCCESSFUL OBSERVING PROPOSALS

Principal Investigator (PI) of 12 proposals (in total 610 observing hours), Col of 13 proposals

- (PI: Karovicova) **PIONIER/VLTI**, 'Calibrating large stellar surveys of the Milky Way using Benchmark Stars observed with PIONIER at the VLTI' (**Calibrators** ID: 097.D-0238)
- (PI: Karovicova) **AMBER/VLTI**, 'Interferometric Observations of Benchmark Stars for calibrating large stellar surveys of the Milky Way' (**Calibrators** ID: 096.D-0219)
- (PI: Karovicova) **AMBER/VLTI**, 'Interferometric Observations of Benchmark Stars for the Gaia Mission and the Gaia-ESO Survey' (**Gaia calibrators** ID: 094.D-0572 )
- (PI: Karovicova) **AMBER/VLTI**, 'Do the asymmetries of Mira variables originate in the photosphere or in the circumstellar environment?' (**AGB** ID: 084.D-0839 )
- (PI: Karovicova) **MIDI/VLTI**, 'MIDI observations of oxygen-rich AGB stars RR Aql and  $\alpha$  Ceti', (**AGB** ID: 091.D-0550)
- (PI: Karovicova) **MIDI/VLTI**, 'Structure of flared protoplanetary discs around young intermediate mass stars at 1-10AU scales' (**YSO** ID: 091.C-0910)
- (PI: Karovicova) **MIDI/VLTI**, 'Investigation of the dust shells surrounding the oxygen-rich RSG star VX Sgr and the carbon-rich AGB star RT Cap' (**AGB** ID: 091.D-0567)
- (PI: Karovicova) **MIDI/VLTI**, 'Exploring limits of the MIDI+FSU operational mode opening new possibilities for AGN observations' (**AGN** ID: 090.B-0938)
- (PI: Karovicova - (Ireland)) **CHARA**, 'Interferometric Observations of Benchmark Stars for calibrating large stellar surveys of the Milky Way' (**Calibrators** ID: P1))
- (PI: Karovicova - (Ireland)) **CHARA**, 'Interferometric Observations of Benchmark Stars for calibrating large stellar surveys of the Milky Way' (**Calibrators** ID: P2))
- (PI: Karovicova - (Ireland)) **CHARA**, 'Interferometric Observations of Benchmark Stars for calibrating large stellar surveys of the Milky Way' (**Calibrators** ID: P3))
- (PI: Karovicova - (Ireland)) **CHARA**, 'Interferometric Observations of Benchmark Stars for calibrating large stellar surveys of the Milky Way' (**Calibrators** ID: P4))
- (PI: Karovicova - (Ireland)) **CHARA**, 'Interferometric Observations of Benchmark Stars for calibrating large stellar surveys of the Milky Way' (**Calibrators** ID: P5))
- (Col, PI: Ireland) **PIONIER/VLTI**, 'Precision diameters for the Gaia era' (**Calibration** ID: 099.D-2031)
- (Col, PI: Tristram) **MIDI/VLTI**, 'Mapping the warm, extended dust emission in the ionisation cone of the Circinus galaxy' (**AGN** ID: 090.B-0090, 091.B-0895)
- (Col, PI: Cruzalèbes) **AMBER/VLTI**, 'Observations of the atmospheric dynamics of the cool evolved stars VX Sgr and RT Cap' (**AGB** ID: 091.D-0101)
- (Col, PI: Wittkowski) **AMBER+MIDI/VLTI**, 'Investigating the origin of long secondary periods in AGB stars: is it binarity?' (**AGB** ID: 384.D-0286, 385.D-0115, 087.D-0184)
- (Col, PI: Wittkowski) **AMBER/VLTI**, 'Tomographic imaging of an AGB star: Investigating clumpy molecular layers at different atmospheric heights' (**AGB** ID: 089.D-0575)
- (Col, PI: Wittkowski) **AMBER/VLTI**, 'Unraveling the outer atmospheric structure and fundamental parameters of galactic red supergiants' (**AGB** ID: 085.D-0112)
- (Col, PI: Wittkowski) **AMBER+MIDI/VLTI**, 'Imaging of an AGB star: Investigating atmospheric convection cells and clumpy molecular and dusty layer' (**AGB** ID: 085.D-0117)
- (Col, PI: Wittkowski) **AMBER+MIDI/VLTI**, 'Probing mass loss: The radial structure and morphology of the extended atmosphere of the prototype Mira variable  $\alpha$  Ceti' (**AGB** ID: 091.D-0765)
- (Col, PI: Boboltz) **VLBA**, 'Coordinated VLBA/VLTI observations of Mira ( $\alpha$  Ceti)', (**AGB** ID: VLBA/13A-546)

## SUCCESSFUL OBSERVING PROPOSALS - continuation

- (Col, PI: Boboltz) **VLBA**, 'Multi-wavelength Imaging of the Mira Variable RR Aquilae', (AGB ID: VLBA/10B-132)
- (Col, PI: Creevey) **VEGA/CHARA**, 'Constraints on effective temperatures for old and metal-poor benchmark stars' (**Gaia calibrators** )
- (Col, PI: Rains) **PIONIER/VLTI**, 'Precision Diameters for the Gaia era I (P101A ESO Cycle) 'Calibrators I )
- (Col, PI: Rains) **PIONIER/VLTI**, 'Precision Diameters for the Gaia era II (P101A ESO Cycle) 'Calibrators II )

## OBSERVING EXPERIENCE

432h at CHARA and 59h at the VLTI on site, additionally 119h in service mode at the VLTI - all listed as PI

---

2021 August	PAVO/CHARA, optical interferometry
2018 August	PAVO/CHARA, optical interferometry
2017 February	PAVO/CHARA, optical interferometry
2016 October	PAVO/CHARA, optical interferometry
2016 August	PAVO/CHARA, optical interferometry
2016 May	PAVO/CHARA, optical interferometry
2016 September	PIONIER/VLTI, near infrared interferometry
2016 August	PIONIER/VLTI, near infrared interferometry
2016 July	PIONIER/VLTI, near infrared interferometry
2015 March	PAVO/CHARA, optical interferometry
2015 June	PAVO/CHARA, optical interferometry
2015 August	PAVO/CHARA, optical interferometry
2015 October	PAVO/CHARA, optical interferometry
2015 January	AMBER/VLTI, near infrared interferometry
2014 November	AMBER/VLTI, near infrared interferometry
2013 September	MIDI/VLTI, mid infrared interferometry
2013 April	MIDI/VLTI, mid infrared interferometry
2010 June	MIDI/VLTI, mid infrared interferometry
2010 June	AMBER/VLTI, near infrared interferometry
2009 March	MIDI/VLTI, mid infrared interferometry
2009 March	AMBER/VLTI, near infrared interferometry

## SKILLS

Programming	IDL, Python, Fortran, Matlab, shell: script
Webpages	HTML, CSS
Database system	PostgreSQL (familiar)
OS	UNIX & Linux, Windows
Data Interpretation - interferometry	near-infrared interferometry (AMBER, PIONIER at the VLTI), mid-infrared interferometry (MIDI at the VLTI), optical interferometry (PAVO at the CHARA array)
Data Interpretation - spectroscopy	spectroscopy (ELODIE)
Radiative Transfer Code	mc_sim, TORUS, HYPERION, DUSTY
Dynamic Model Atmospheres	CODEX code
Imaging Code	BSMEM code
Data Reduction Package	amdlib-yoric interface (AMBER/VLTI), mia, ews (MIDI/VLTI), pavo (PAVO/CHARA), Midas (ELODIE)

## SEMINARS / TALKS - (selected)

October 2020	Interferometric observations, ESA/ESAC
January 2020	Fundamental parameters, Heidelberg
February 2019	Benchmarks for large stellar surveys, Heidelberg
August 2018	Benchmark stars, Cambridge
February 2018	High angular resolution observations, Heidelberg
May 2017	Validating stars for spectroscopic surveys, Heidelberg
January 2017	AGB stars observed by interferometry, Cambridge
February 2016	Pulsating Stars, Aarhus
January 2016	Fundamental Mass loss, Mexico City
February 2015	Observations of stars at high angular resolution, Heidelberg
May 2014	High angular resolution observations, Cambridge
July 2013	Dust Growth in Star-&Planet-Forming Environments, Heidelberg
May 2013	New Advances in Stellar Physics: from Microscopic to Macroscopic Processes, Roscoff
April 2013	Dust formation in AGB stars, Santiago de Chile
May 2011	Ten Years of VLTI, Garching
January 2011	Observations with the VLTI, Heidelberg
May 2010	Evolution of Solar-mass Stars Observed with High Angular Resolution, Garching
August 2010	Why Galaxies Care About ABG Stars, Vienna

## PUBLICATIONS (10 refereed selected)

**Karovicova, I.**, White, T., Nordlander, T., et al., 2022b, A&A, 658, A48, 'Fundamental stellar parameters of benchmark stars from CHARA interferometry - III. Giant and subgiant stars'

**Karovicova, I.**, White, T., Nordlander, T., et al., 2022a, A&A, 658, A47, 'Fundamental stellar parameters of benchmark stars from CHARA interferometry - II. Dwarf stars'

**Karovicova, I.**, White, T., Nordlander, T., et al. 2020, A&A, 'Fundamental stellar parameters of benchmark stars from CHARA interferometry - I. Metal-poor stars', 640, 25K

Rains, A. D.; Ireland, M. J.; White, T. R.,...**Karovicova, I.**,... et al., 2020, MNRAS, 'Precision angular diameters for 16 southern stars with VLTI/PIONIER', 493.2377R

**Karovicova, I.**, White, T., Nordlander, T., et al. 2018, MNRAS, 'Accurate effective temperatures of the three metal-poor benchmark stars HD 140283, HD 122563 and HD 103095 from CHARA interferometry', 475L, 81K

Grundahl, F.; Fredslund Andersen, M.; Christensen-Dalsgaard, J.,...**Karovicova, I.**,... et al., 2017, ApJ, 'First Results from the Hertzprung SONG Telescope: Asteroseismology of the G5 Subgiant Star Hercules', 836, 142G

Wittkowski, M., Chiavvasa, A., Freytag, B.,...**Karovicova, I.** et al., 2016, A&A, 'Near-infrared spectro-interferometry of Mira variables and comparisons to 1D dynamic model atmospheres and 3D convection simulations', 587A, 12W

**Karovicova, I.**, Wittkowski, M., Ohnaka, et al., 2013, A&A, 'New insights into the dust formation of oxygen-rich AGB stars', 560, 75K

**Karovicova, I.**, Wittkowski, M., Boboltz, D. A. et al., 2011, A&A, 'Mid-infrared interferometric monitoring of evolved stars. The dust shell around the Mira variable RR Aquilae at 13 epochs', 532, A134

Wittkowski, M., Boboltz, D. A., Ireland, M., **Karovicova, I.** et al., 2011, A&A, 'Inhomogeneities in molecular layers of Mira atmospheres', 532L, 7W