doc. Mgr. Daniela Korčáková, Ph.D.

associate professor

current affilication: Astronomical Institute
Faculty of Mathematics and Physics
Charles University
Prague, Czech Republic

CONTACT

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NASA/ADS publication list

SKILLS

Observations

spectroscopy:
Ondřejov 2 m telescope 1998 – 2019
photometry:
60 cm telescope 1998 – 2002

Large Observation Projects

QUVIK – satellite for UV photometry – part of the scientific team

Successful Proposals

UVES/ESO/UT2
2 m telescope at San Pedro Mártir Observatory, Mexico
3.6 m DOT, India

Programming and Software Knowledge

IRAF
SPLAT
Fotran
IDL
Python
debian, ubuntu
HTML, LaTeX

Languages

Czech
English
German
Russian

FIELD OF INTEREST

spectroscopy
UV photometry
polarimety
FS CMa stars
B[e] stars
hot stars
circumstellar matter
disks
radiative transfer
stellar wind
stellar atmospheres
mergers

HOBBIES

surfing, skiing, cycling, paddle-boarding, snowboarding, hiking

WORK HISTORY

11/2010 ...
Astronomical Institute of the Charles University, Prague, Czech Republic
2023 ...full-time associate professor
2014 – 2023 full-time of assistant professors
2010 – 2014 full-time research position

10/1999 – 09/2010
Institut für Astronomie und Astrophysik, Tübingen, Germany
one year stay

09/1998 – 10/2010
Astronomical Institute of the Academy of Science of the Czech Republic in Ondřejov
2009 – 2010 full-time research position
2002 – 2008 full –time research assistant (postdoc)
1998 – 2002 half–time research assistant

EDUCATION

1998 – 2003
Masaryk University, Brno, Czech Republic
PhD thesis *"NLTE models of the moving stellar atmospheres"*

1993 – 1998
Masaryk University, Brno, Czech Republic
diploma thesis *"Spectroscopy of the cool star β UMi"*

1989 – 1993
high school in Litovel, Czech Republic
student research project *"'Planetary nebulae"*

TEACHING

successfully defended thesis: three PhD, two master, and two bachelor students
three student research projects successfully finished
currently: two PhD students and one bachelor
lectures: since 2011 Astrophysics I, 2014, 2016, 2020, and 2022 Stellar and planetary atmospheres, since 2011 Practical course of spectroscopy
exercises: 2001 Physics of stellar atmospheres, 1998, 2000 Calculus I, 1999 Calculus II

WORK FOR THE COMMUNITY

since 2018 member of IAU Commission G5 Stellar and Planetary Atmospheres
member of a selection committee for the program of the Ministry of Education Youth and Sports that supports student and post-docs stays in ESO
member of the committee Czech Astrophotography of the Month
head of the LOC:
"The B[e] Phenomenon: Forty Years of Studies", 27 June - 1 July 2016, Prague, Czech Republic
"Digital Exoplanets, workshop, 27 – 30 January 2019, Prague, Czech Republic

ACHIEVEMENTS, HONOURS AND AWARDS

2009 Otto Wichterle Award

RESEARCH INTERESTS

The main research interest of D. Korčáková are Be and B[e] stars from both observational and theoretical points of view. Her observing program is focused on FS CMa type stars, a subgroup of the B[e] stars. The evolutionary status of these stars is still not determined, as well as the basic physical properties and phenomena. Her observing program ran from 2004 to 2019 at the Ondřejov Observatory (Czech Republic). Later, it was coordinated with the program at Three College Observatory (near Greensboro, USA) and partially with the Observatorio Astronomico Nacional San Pedro Mártir (Mexico).
The theoretical work of D. Korčáková is focused on the multidimensional radiative transfer in moving media. She developed a numerical code for rapidly rotating stars (gravity darkening), stars with extended atmosphere, stellar wind, and accretion discs around white dwarfs. It can also be applied for the study of protoplanetary nebulae.
D. Korčáková teaches the courses of Astrophysics I (introduction to the spectroscopy, interstellar matter, star formation), Stellar and Planetary Atmospheres, Special Practical Class II – spectroscopy. She also has been leading many Bachelor, Master and, PhD students for eighteen years.

SELECTED PUBLICATIONS

2.5D magnetohydrodynamic models of circumstellar discs around FS CMa post-mergers - I. Non-stationary accretion stage

Moranchel-Basurto, A., **Korčáková**, D. & Chametla, R. O

2023 MNRAS 523, 5554 ADS, arXiv

first MHD simulations of a post-merger of a mass corresponding to the B-type stars in the phase when the envelope started to be transparent

First detection of a magnetic field in low-luminosity B[e] stars. New scenarios for the nature and evolutionary stages of FS CMa stars

Korčáková, D., Sestito, F., Manset, N., at al.

2022 A&A, 659A, 35K ADS, arXiv

post-merger nature of IRAS 17449+2320

Time-dependent spectral-feature variations of stars displaying the B[e] phenomenon. III. HD 50138

Jeřábková, T., **Korčáková**, D., Miroshnichenko, A., et al.

2016 A&A, 586A, 116 ADS, arXiv

detailed description of the spectral behaviour based on the analysis of 20 years observations (obtained and archival data)

Time-dependent spectral-feature variations of stars displaying the B[e] phenomenon. II. MWC 342

Kučerová, B., **Korčáková**, D., Polster, J., et al.

2013 A&A, 554A, 143 ADS,

first detection of the material infall and expanding decelerating layers in FS CMa stars

Time-dependent spectral-feature variations of stars displaying the B[e] phenomenon. I. V2028 Cygni

Polster, J., **Korčáková**, D., Votruba, V., et al.

2012 A&A, 542A, 57 ADS, arXiv

first systematic spectroscopic study of a FS CMa star

Influence of the velocity gradient on the line formation in discs of cataclysmic variables

Korčáková, D., Nagel, T., Werner, K., Suleimanov, V., & Votruba, V.

2011 A&A, 529A, 119 ADS,

first numerical calculations of the disk line-profiles with the inclusion of the velocity shear in the disk

Radiative transfer in moving media. II. Solution of the radiative transfer equation in axial symmetry

Korčáková, D. & Kubát, J.

2005 A&A, 440, 715 ADS, arXiv

new method for the radiative transfer calculations; appropriate for stellar winds, disk, jets, and rapidly rotating stars