

doc. Mgr. Daniela Korčáková, Ph.D.

associate professor

current affiliation: 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

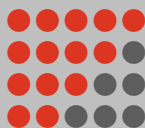
Languages

Czech

English

German

Russian



FIELD OF INTEREST

spectroscopy

UV photometry

polarimetry

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; 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, two bachelor

three student research projects successfully finished

currently: two PhD students

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

2024 ...vice-president of the Organizing Committee of the IAU Commission G5

2024 ...member of the ESO Users Committee

2018-2024 member of the Organizing Committee of the IAU Commission G5
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

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 Astronómico 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

The mass distribution of stellar mergers: A new scenario for several FS CMa stars

 Dvořáková, N., **Korčáková**, D., Dinnbier, F. & Kroupa, P.

 2024  A&A, 689A, 234

 [ADS](#), [arXiv](#)

The first distribution of mergers according spectral type based on N-body simulations.

2.5-MHD models of circumstellar discs around FS CMa post-mergers: II. Stationary accretion stage

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

 2024  MNRAS 528, 7310M

 [ADS](#), [arXiv](#)

MHD simulations of a post-merger of a mass corresponding to the B-type stars

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., et 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