

Disks, planets and auroras

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INSTITUTE OF PHYSICS
IN OPAVA



ETC Hrvatska | European Talent
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- Work with CAMK PhD students, summer students 2023 in CAMK, mentoring in STEM Talent center Croatia
- CAMK small radio telescope
- Aurora on pulsar planets
- Publications
- Grants, workshop organization, presentations

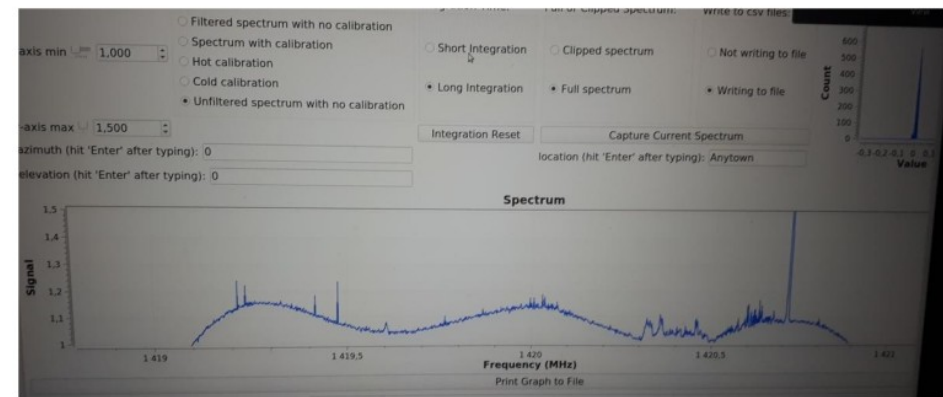
Work with CAMK PhD students, summer students and mentoring³ in STEM program

- In CAMK I work with PhD students in Prof. Kluźniak group on simulations of accretion disks with PLUTO and KORAL.
- 4 summer students worked with me on-site in CAMK on simulations of star-planet interaction in collaboration with Jacobo Varela from Spain: 3 from Warsaw University and one from Glasgow University. This year the topic was (exo) uranus and neptune, also in hot versions, and aurora on them.
- In the Institute of Physics in Opava, I introduce students to numerical simulations.
- In Croatia, I continue mentoring secondary school students in the European Talent Center, on astroinformatics-modern connection of astronomy with general education

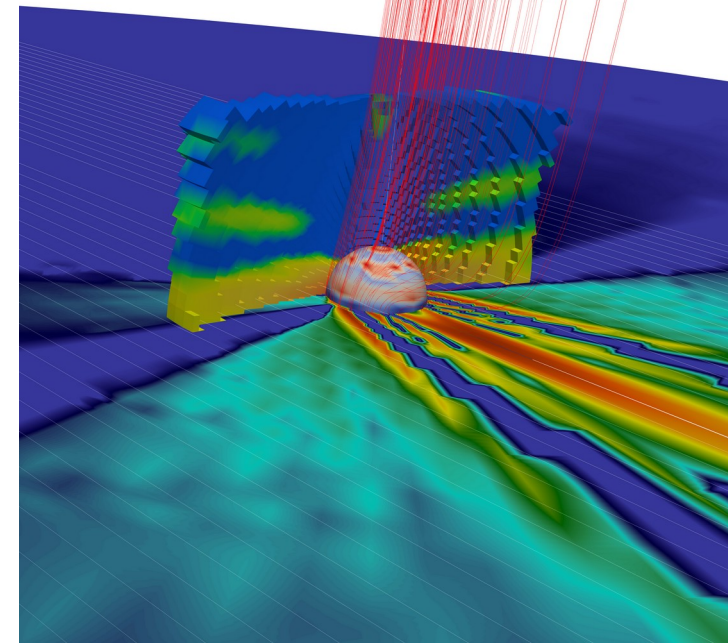
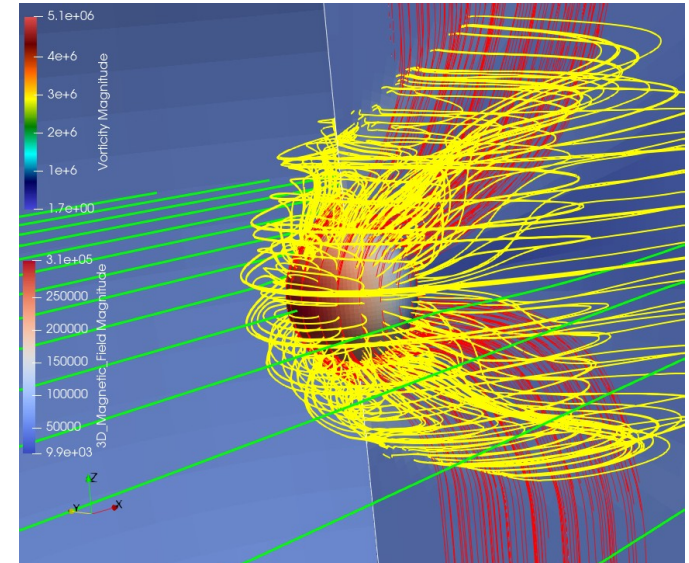
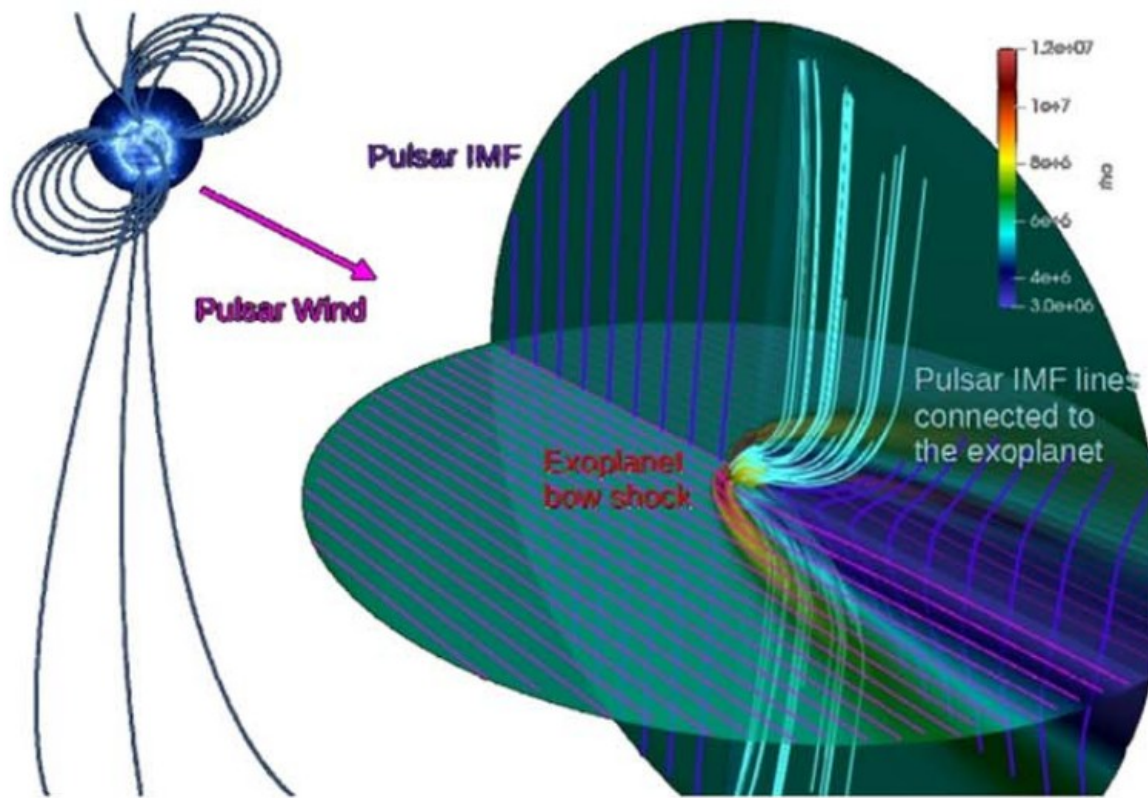
CAMK small radio telescope

Software defined radio (SDR) revived amateur radio astronomy.

- A good learning device, and perfect public engagement tool.
- In CAMK, I started the initiative to build and operate a small- radio telescope.
- The first result is here, from CAMK workshop. Learning potential is infinite.
Students are welcome!



The first work on radio emission from aurora on non-magnetic pulsar planets 5



Ruchi Mishra et al., "Auroras on planets around pulsars", 2023, ApJ, 959, L13. Thanks to large pulsar magnetic field, such **emission** is millions of times more intense than in the Sun-Earth case; it **could be observable even with the current instruments**.

Publications, grants, workshop organization, presentations⁶

- **Publications:** 1 ApJL, 2 MNRAS, 2 A&A + 3 conference Proceedings
- Participated in grant application in Opava, Czech Rep. (-),
- Applied for Copernican Academy grant (?)

- **Organized** “Kolan-Mandre Discs and Black Holes” workshop for our PL/CZ group, on the island of Pag in Croatia. Conference photo:

Presentations:

- Contributed talk on flux ropes at the "Astroparticle 2023" meeting, February, Krakow
- Presentation on pulsar planets at workshop "Disks, Tori, spheres", June, Opava, Czech Republic
- 4 Posters with PhD students in July, EAS2023, Krakow
- Keynote speaker talk on radio emission from pulsar planet auroras at RAGTIME 25, November
- Presentations on pulsar planet auroras in NCBJ and CAMK seminars
- Presentation on amateur radio telescope in “Meeting with Astronomy”, scientific outreach in CAMK in Dec.
- Few scientific outreach presentations in Croatia.

