



# X-RAY ASTRONOMY 2019

*Current Challenges and New Frontiers in the Next Decade*

8-13 September 2019  
CNR/INAF Research Area, Bologna, Italy

Contribution ID: 65

Type: **Poster**

## Accretion disk atmosphere of X-ray binaries: The case of EXO 0748-676

*Friday 13 September 2019 15:48 (2 minutes)*

X-ray binaries exhibit ionized emission from an extended disk atmosphere that surrounds the accretion disk. However, the nature and exact geometry of the atmosphere are not fully understood. Here, I will present results from our recently published paper (Psaradaki et al. 2018) about the case study of the bright low-mass X-ray binary EXO 0748-676. In this work we carry out high-resolution X-ray spectroscopy of archival XMM-Newton observations in order to probe the accretion disk atmosphere. We model the high-resolution spectrum obtained when the compact object is eclipsed by the companion star. This unique situation enables us to study the emission lines that come only from the disk atmosphere of the source and gain new insights into its physical structure.

The emission line spectrum reveals two photoionized gas components with different physical characteristics. We propose a scenario where the high ionization component constitutes an extended upper atmosphere of the accretion disk. The lower ionization component may instead be a clumpy gas created by the accretion stream from the companion star impacting the disk.

### Topic

Compact and diffuse sources in galaxies and in the Galactic Center

### Affiliation

SRON, The Netherlands Institute for Space research

**Author:** Ms PSARADAKI, Ioanna (SRON, The Netherlands Institute for Space Research)

**Co-authors:** Dr COSTANTINI, Elisa (SRON, The Netherlands Institute for Space Research); Dr MEHDIPOUR, Missagh (SRON, The Netherlands Institute for Space Research)

**Presenter:** Ms PSARADAKI, Ioanna (SRON, The Netherlands Institute for Space Research)

**Session Classification:** POSTER SESSION