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: **258** Type: **Poster**

Extended X-ray Emission Around Wolf-Rayet Stars: Circumstellar Structure and Evolution

Friday, 13 September 2019 15:23 (1 minute)

We discuss the hot gas detected in X-rays around Galactic Wolf-Rayet stars. In particular, we discuss the XMM-Newton detection of extended X-ray emission from the Wolf-Rayet ring nebula NGC 3199, unveiling the powerful effect of the fast wind from WR 18. The X-ray emission is brighter in the region southeast of the star and an analysis of the spectral properties of the X-ray emission reveals abundance variations: (i) regions close to the optical arc present nitrogen-rich gas enhanced by the stellar wind from WR 18 and (ii) gas at the eastern region exhibits abundances close to those reported for the nebular abundances derived from optical studies, which is a signature of an efficient mixing of the nebular material with the stellar wind. The dominant plasma temperature and electron density are estimated to be $T \approx 1.2 \times 10^6$ K and $n_e = 0.3$ cm^{-3} with an X-ray luminosity in the 0.3-3.0 keV energy range of $L_X = 2.6 \times 10^{34}$ erg s^{-1}, which is not atypical of hot bubbles around massive stars, but which is lower than expected from standard wind-blown bubble theory. We discuss the implications in particular with respect to nebulae around apparent runaway Galactic Wolf-Rayet stars.

Topic

Compact and diffuse sources in galaxies and in the Galactic Center

Affiliation

ESA / ESAC

Primary author: MARSTON, Anthony (ESA / ESAC)

Co-authors: Dr TOALA, Jesus (UNAM); Dr GUERRERO, Martin (IAA-CSIC)

Presenter: MARSTON, Anthony (ESA / ESAC)

Session Classification: POSTER SESSION