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Modelling the thermal X-ray emission around the Galactic centre from colliding Wolf-Rayet winds

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Abstract. We compute the thermal X-ray emission from hydrodynamic simulations of the 30 Wolf-Rayet (WR) stars orbiting within a parsec of Sgr A*, with the aim of interpreting the *Chandra* X-ray observations of this region. The model well reproduces the spectral shape of the observations, indicating that the shocked WR winds are the dominant source of this thermal emission. The model X-ray flux is tied to the strength of the Sgr A* outflow, which clears out hot gas from the vicinity of Sgr A*. A moderate outflow best fits the present-day observations, even though this supermassive black hole (SMBH) outflow ended ∼100 yr ago.

Keywords. Galaxy: centre, X-rays: stars, stars: Wolf-Rayet, stars: winds, outflows

Fig. 1 shows the main results. See Russell *et al.* (2017) for further details of this work.

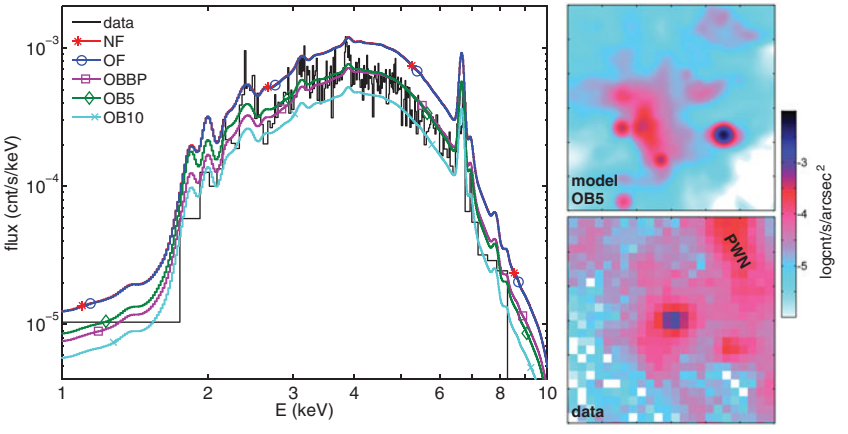

Figure 1. *Left*: ACIS-S/HETG zeroth-order spectra from 2″–5″ ring around Sgr A*. The SMBH outflow increases from NF (no feedback) to OB10 (strongest feedback). *Right*: ACIS-S/HETG zeroth-order 4-9 keV images of 12″×12″ centered on Sgr A*, showing the best-fit model (OB5) and the data. The non-thermal emission from the SMBH and pulsar wind nebula is not modeled.

Reference

Russell, C. M. P., Wang, Q. D., & Cuadra, J. 2017, *MNRAS*, 464, 4958