

## Low energy X-ray line emission from Her X-1: XMM-Newton/RGS observations around the Turn-On

Show affiliations

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Her X-1 is a bright intermediate-mass X-ray binary system consisting of a pulsar with a 1.24-s rotational period and a 1.7-d orbital period. The neutron star accretes matter from its A/F donor through an accretion disk. The accretion disk is warped, tilted, and precessing causing a 35-d variation cycle that affects the emission from the central source. This 35-d cycle is characterised by states of high X-ray flux (main-on and short-on) and low-states with intensity of 3% of the main-on intensity. During the turn-on of the main-on the accretion disk completely opens up our view onto the neutron star. During this time we are able to observe emission directly from the central source, and scattering and absorption features caused by an atmosphere. We observed Her X-1 four times during this phase. We will present RGS data analysis, showing the detected lines at specific stages before, during, and after the turn-on. Measurements of the line evolution at each stage enables us to constrain the emission region and measure the structure and geometry of the disk atmosphere

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