

A detailed X-ray study of the pulsar wind nebula around PSR B1853+01

We report the results of a composite analysis of the pulsar wind nebula (PWN) around PSR B1853+01 using archival data from *Chandra*, *XMM-Newton* and NuSTAR. Both images from *Chandra* and *XMM-Newton* in hard X-rays (>2 KeV) show a PWN consisting of an extended tail-like structure trailing the pulsar and an unorthodox diffuse antennae-like feature ahead of the pulsar. Spatially resolved spectroscopy results reveal that the diffuse X-ray emission ahead of the pulsar is relatively hard compared to regions inside the tail structure. Considering that this PWN is embedded in hot plasma inside of the supernova remnant W44, this peculiar relatively hard extended emission could be explained by high energy particles escaping bow shock and then attaching to magnetic field lines.

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