

The X-ray under-luminosity of the O-type supergiants HD16691 and HD14947 revealed by XMM-Newton

M. De Becker

Department of Astrophysics, Geophysics and Oceanography, University of Liège, Belgium

The members of the scarce category of Of⁺ supergiants present properties that are intermediate between regular O-stars and Wolf-Rayet (WR) stars. Significant similarities between these transitional stars and WN-type objects are now clearly established, at least in the visible and near-infrared domains, pointing to common stellar wind properties. In this study, we report on the first dedicated X-ray observations of HD16691 (O4If⁺) and HD14947 (O5f⁺), revealing a soft thermal spectrum in agreement with the expected X-ray emission from a single O-type star. However, the X-ray luminosity of our targets is slightly lower than expected for single O-type stars, suggesting that the particular properties of their stellar wind has also a significant impact on the X-ray emission of these objects on the way to the WN category. We argue that the X-ray under-luminosity of HD16691 and HD14947 may be interpreted as the signature in X-rays of the intermediate stage between O and WR stars, as a consequence of enhanced wind density.

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Email: debecker@astro.ulg.ac.be