

University of Groningen

The high-energy emission from the massive colliding-wind binary HD 93129A near periastron

Del Palacio, S.; García, F.; Altamirano, D.; Corcoran, M.; Hamaguchi, K.; Barbá, R. H.; Bosch-Ramon, V.; De Becker, M.; Maíz Apellániz, J.; Munar Adrover, P.

Published in:
 Bulletin of the American Astronomical Society

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
 Publisher's PDF, also known as Version of record

Publication date:
 2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Del Palacio, S., García, F., Altamirano, D., Corcoran, M., Hamaguchi, K., Barbá, R. H., Bosch-Ramon, V., De Becker, M., Maíz Apellániz, J., Munar Adrover, P., Paredes, J. M., Romero, G. E., Sana, H., Tavani, M., & Ud-Doula, A. (2021). The high-energy emission from the massive colliding-wind binary HD 93129A near periastron. *Bulletin of the American Astronomical Society*, 53(1), [id. 136.09].
<https://ui.adsabs.harvard.edu/abs/2021AAS...23713609D>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

The high-energy emission from the massive colliding-wind binary HD 93129A near periastron

S. Del Palacio¹, F. García², D. Altamirano³, M. Corcoran⁴,
K. Hamaguchi⁴, R. H. Barbá⁵, V. Bosch-Ramon⁶, M. De Becker⁷,
J. Maíz Apellániz⁸, P. Munar Adrover⁶, J. M. Paredes⁶, G. E. Romero¹,
H. Sana⁹, M. Tavani¹⁰, A. Ud-Doula¹¹

¹Instituto Argentino de Radioastronomía, Villa Elisa, Argentina,

²Kapteyn Astronomical Institute, University of Groningen, Groningen, Netherlands,

³School of Physics and Astronomy, University of Southampton, Southampton, United Kingdom,

⁴CRESST II and X-ray Astrophysics Laboratory NASA/GSFC, Greenbelt, MD,

⁵Departamento de Astronomía, Universidad de La Serena, La Serena, Chile,

⁶Institut de Ciències del Cosmos (ICCUB), Universitat de Barcelona, Barcelona, Spain,

⁷Space sciences, Technologies and Astrophysics Research (STAR) Institute, University of Liège, Liège, Belgium,

⁸Centro de Astrobiología, CSIC-INTA, Madrid, Spain,

⁹Instituut voor Sterrenkunde, KU Leuven, Leuven, Belgium, ¹⁰INAF-IAPS, Roma, Italy,

¹¹Department of Physics, Penn State Scranton, Dunmore, PA

Published on: Jan 11, 2021

License: [Creative Commons Attribution 4.0 International License \(CC-BY 4.0\)](https://creativecommons.org/licenses/by/4.0/)

We conducted an observational campaign towards one of the most massive and luminous colliding wind binaries in the Galaxy, HD 93129A, close to its periastron passage in 2018. During this time the source was predicted to be in its maximum of high-energy emission. We present the results from our observations with the X-ray satellites *Chandra* and *NuSTAR* and the γ -ray satellite *AGILE*. High-energy emission coincident with HD 93129A was detected in the X-ray band up to ~ 18 keV, whereas in the γ -ray band only upper limits were obtained. We interpret the derived fluxes using a non-thermal radiative model for the wind-collision region. We estimate the fraction of the wind kinetic power that is converted into relativistic electron acceleration and the magnetic field in the wind-collision region. We conclude that multiwavelength, dedicated observing campaigns during carefully selected epochs are a powerful tool for characterizing the relativistic particle content and magnetic field intensity in colliding wind binaries.