

The Milky Way Revealed by Gaia: The Next Frontier



Contribution ID: 89

Type: **Contributed talk**

The white dwarf population revealed by Gaia

Tuesday, 5 September 2023 15:00 (15 minutes)

The *Gaia* mission has brought an unprecedented revelation in our understanding of the white dwarf population of the Solar neighborhood. The excellent astrometry and photometry provided by DR2 and eDR3 have unveiled unexpected patterns in the Hertzsprung-Russell diagram, such as the bifurcation or the so-called Q-branch. The analysis and comprehension of such features rely on an accurate determination of the type of atmospheres of white dwarfs (dominated by hydrogen, or helium, or with traces of carbon or other metals). This fact is crucial for determining key stellar parameters, such as temperature, mass, or age of these objects. The use of powerful analysis tools such as VOSA (Virtual Observatory SED Analyzer) or automated classification techniques like Random Forest algorithm has enabled the extraction of maximum information from low-resolution spectra provided by *Gaia* DR3 for approximately 100,000 white dwarfs within 500 pc, allowing for a spectral classification that sheds light on those intriguing characteristics of the white dwarf population.

Primary author: TORRES GIL, Santiago (Universitat Politècnica de Catalunya)

Co-authors: GARCÍA ZAMORA, Enrique Miguel (Universitat Politècnica de Catalunya); JIMÉNEZ-ESTEBAN, Fran (CAB (INTA-CSIC)); REBASSA-MANSERGAS, Alberto (Universitat Politècnica de Catalunya); MURILLO-OJEDA, Raquel (Centro de Astrobiología, CSIC-INTA); CAMISASSA, Maria (Universitat Politècnica de Catalunya); CRUZ, Patricia (Centro de Astrobiología); SOLANO, Enrique (Centro de Astrobiología (INTA-CSIC)); RADDI, Roberto (Universitat Politècnica de Catalunya); SANTOS GARCÍA, Alejandro (Universitat Politècnica de Catalunya)

Presenter: TORRES GIL, Santiago (Universitat Politècnica de Catalunya)

Session Classification: WG2. The Life and Death of Stars (II). Chair: Ivanka Stateva