Contribution ID: **37** Type: **Contributed Talk**

# Investigating the impact of circumstellar discs on the non-thermal emission of HESS J0632+057 and other Be gamma-ray binaries

*Thursday 18 September 2025 16:15 (15 minutes)*

Gamma-ray binaries produce multi-wavelength, non-thermal emission that peaks at energies >1 MeV. It is largely understood that the high energy emission in these systems are produced in a termination shock formed between the stellar wind and/or circumstellar disc of the O/Be companion and the relativistic pulsar wind from a young, rapidly rotating, neutron star compact object. The gamma-ray binary HESS J0632+057 consists of a Be star and undetected compact object in a ˜317.3 day orbit, and displays two peaks in the TeV and X-ray lightcurves. These peaks are believed to be as a result of the compact object crossing the circumstellar disc, similar to what is observed for the Be gamma-ray binary PSR B1259-63. However, the interpretation of the emission from the system is complicated by the lack of a clear orbital solution, as multiple different orbital solutions have been proposed. We present an update on the long-term optical spectroscopic observations of HESS J0632+057 with SALT, from which we have obtained a new orbital solution and which will simplify the interpretation of the emission from this system. To this end, we are undertaking simple modelling of the optical and high energy emission from the pulsar-disc interaction along the orbit to probe the impact of the circumstellar disc on the multi-wavelength emission for this, and other Be gamma-ray binaries.

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**Session Classification:** X-Ray and Gamma-Ray Binaries

**Track Classification:** X-Ray and Gamma-Ray Binaries