Contribution ID: **1031** Type: **Poster**

# Fast Blue Optical Transients as cosmic-ray sources

Fast Blue Optical Transients (FBOTs) are luminous short-lived events, that strongly emit at blue colors around their peak in the optical waveband. The late-time emission shows similarities to supernovae (SNe) associated with long GRBs and superluminous SNe but the origin of FBOTs is not yet understood. However, the fast rise-time of the optical emission of a few days indicates fast-moving ejecta interacting with dense material (CSM) close to the "central engine". The high luminosities in the optical, radio and x-ray bands suggest efficient particle acceleration due the high mass passing through the shock and consequently the possibility for high cosmic-ray currents driving magnetic-field growth and consequently acceleration.

The evolution of the radio-emission is very similar for both FBOTs and objects like e.g. Type-IIn supernovae where shocks interact with material from previous LBV eruptions after 10s-1000s of days. In both cases, the CSM-interaction is detected strongly in optical wavelengths and followed by bright radio-emission with a substantial delay of 10s-100s of days for Type-IIn SNe and <10 days for FBOTs. We extrapolate our existing numerical models for Type-IIn SNe to earlier shock-CSM interactions as similarities in the acceleration process between the SNe and FBOTs can be expected based on the observational signatures.

We obtain the gamma-ray luminosity and maximum energy of FBOTs and find that only a small fraction of 10^-3% of the explosion energy gets converted to cosmic-rays. At the same time, the maximum energy easily exceeds a few PeV. Strong gamma-gamma absorption hinders a detection with current generation instruments.

## Collaboration(s)

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**Session Classification:** PO-2

**Track Classification:** Gamma-Ray Astrophysics