

7th Heidelberg International Symposium on High-Energy Gamma-Ray Astronomy

Contribution ID: 494

Type: **Review, Highlight, or Invited talk**

Nova explosions

Wednesday, July 6, 2022 11:55 AM (25 minutes)

Classical and recurrent nova explosions occur on top of white dwarfs accreting H-rich matter from a companion main sequence or red giant star, in a close binary system. In the recent years, since the launch of the Fermi Gamma-Ray satellite by NASA in 2008, several novae have been detected by Fermi/LAT (LAT: Large Area Telescope) in High-Energy Gamma Rays, with energies larger than 100 MeV. This emission is known to be related to the acceleration of particles in the internal and/or external shocks occurring early after the thermonuclear nova explosion. However, Very High Energy Gamma-Rays produced as a consequence of nova explosions have only being discovered very recently, in the recurrent nova RS Oph, that had an outburst in August 2021. These require the acceleration of protons, and not only of electrons; this was in fact predicted theoretically - based in observations at other wavelengths - in the previous eruption of RS Oph, in 2006, but has not been confirmed observationally until now.

I will review the origin of the different types of gamma-ray emission in novae and highlight the relevance of the recent VHE gamma-rays discoveries for the nova theory, mainly in the field of the mass ejection and the associated particle (electrons and protons) acceleration processes.

Primary author: HERNANZ, Margarita (Instituto de Ciencias del Espacio (CSIC) & IEEC)

Presenter: HERNANZ, Margarita (Instituto de Ciencias del Espacio (CSIC) & IEEC)

Session Classification: Highlight Talks topical