Contribution ID: **23** Type: **Contributed**

Probing orbital parameters of gamma-ray binaries with TeV light curves

Monday 12 April 2021 19:00 (15 minutes)

Gamma-ray binaries are a small but growing class of sources which comprises of binary systems where the spectral energy distribution peaks above 1 MeV. Gamma-ray photons emitted in binary systems are subject to gamma-gamma absorption as they travel through a photon field created by a massive star. Moreover, gamma-gamma absorption might be the main reason for the characteristic decrease of the TeV flux close to periastron observed in such objects as PSR B1259-63/LS 2883 or the recently discovered highly eccentric and long period (40-50 years) PSR J2032+4127/MT91 213. If this is really the case, the location of the minimum in the light curve contains information on the geometry of the system. Such orbital parameters as the inclination angle and the longitude of periastron can be recovered from the shape of the TeV light curve. In this study we propose a method to probe orbital parameters of gamma-ray binaries based on the shape of the observed TeV light curve. It can be used for additional constraints for already known objects and may be particularly useful in the upcoming era of CTA which might discover gamma-ray binaries not previously detected at other wavebands.

Author: SUSHCH, Iurii (Deutsches Elektronen-Synchrotron DESY)

Presenter: SUSHCH, Iurii (Deutsches Elektronen-Synchrotron DESY)

Session Classification: Exploring the Galaxy: Binaries

Track Classification: Binaries