Contribution ID: **129** Type: **Contributed talk**

A new approach to search for binary black holes with Fermi-LAT

Thursday 16 September 2021 15:00 (15 minutes)

Blazars are powered by super-massive black holes in their centers and are known for extreme variability on time scales from minutes to years. In case of a binary black hole system, this duality is traceable as periodic modulation of their gamma-ray emission. So far, high-significance periodicity has been reported for a very few blazars with standard approaches. We developed a method to search for periodic patterns in Fermi/LAT light curves, using information field theory (IFT). IFT is a formulation of Bayesian statistics in terms of fields. Bayesian statistics is ideal for the problem at hand since the data is incomplete, irregularly sampled and obeys non-Gaussian statistics such that common least-squares methods do not apply. Simulated Fermi/LAT light-curves are used for significance testing and to provide a proof of the used method. We present first results, analyzing a sample of promising binary black hole candidates like PG 1553+113 and Mrk 501.

Abstract field

Author: KRETER, Michael

Co-authors: BOETTCHER, Markus (North-West University); ARRAS, Philipp (Max-Planck Institutes (in MetaDir of GWDG)); FRANK, Philipp (MPI f. Astrophysics); ENSSLIN, Torsten (MPI f. Astrophysics); EBERLE, Vincent (MPI f. Astrophysics)

Presenter: KRETER, Michael

Session Classification: Multi-Messenger & Astro-Particle

Track Classification: Multi-Messenger and Astro-particle