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Contribution ID: **55**   Type: **Talk (in-person)**

Statistical and computational methods for the inference of a binary black hole in Mrk 501

Tuesday 6 September 2022 15:10 (20 minutes)

In this work, a multifrequency analysis (radio, optical, x-rays, and gamma rays) of the blazar Mrk 501 is presented. We analyze the light curves of this extragalactic object with different computational algorithms (analysis of variance, discrete Fourier transform, periodograms, wavelets transform, among others). With the help of numerical simulations and light curve fitting using elliptic Jacobi functions, we infer the presence of an eclipsing binary companion with periodicity ˜228d.

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