

Cyg X-3 –gamma-ray binary

Cyg X-3 is the famous binary system containing a black hole. It is actively studied through the wide range of electromagnetic spectrum from radio band up to ultrahigh energies. Cyg X-3 has long been considered as an object for very high energy gamma-ray observations. We present the results of more than 20-year-long studies of Cyg X-3 in the range of 800 GeV–100 TeV with the SHALON telescope. The results are presented with images, spectra during the periods of flaring activity and at low flux periods. The identification of detected TeV gamma-ray source with Cyg X-3 is performed with analysis revealed the very high energy emission modulation corresponding to an orbital period of 4.8 h, which is a signature of Cyg X-3. The correlation of TeV flux increases with the flaring activity of Cyg X-3 at X-ray and radio ranges are found. As well as correlation of increases of high and very high energy gamma-ray fluxes with soft stay of Cyg X-3 at X-rays. Detected modulation of TeV gamma-ray emission with orbit together with the high luminosity of the companion star of Cyg X-3 and the close orbit leads to an efficient generation of the part of gamma-ray emission in the inverse Compton scattering. The correlation of activity at TeV energies with the flares of Cyg X-3 at radio band could be associated with powerful mass ejections from the central regions around the black hole.

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