
MAGIC

Science of the Cosmos

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First observations of X-ray binary IC 10 X-1 in Very high-energy gamma-rays

IC 10 X-1 is an X-ray Binary containing a luminous Wolf-Rayet star as an optical counterpart and probably a black hole as a compact companion. IC 10 X-1 is located in the nearby irregular galaxy IC 10 undergoing the active star formation. This binary is actively studied in optical and X-ray bands. IC 10 X-1 is a bright and variable source of X-rays, surrounded by a shell that is viewed both in X-rays and in a non-thermal radio emission. This shell might be associated with a supernova that produced the compact object in IC 10 X-1. Modulation of X-ray emission detected in Swift and Chandra observations is associated with orbital motion within the binary system. Results of X-ray observation suggested an active accretion from the massive Wolf-Rayet star to the black hole companion. This type of object is considered as a possible source of high-energy emission generated due to the interaction between the black hole and accretion disk form the optical counterpart. Also, as Galactic cosmic rays originate in supernovae and the winds of massive stars, starburst galaxies should produce very-high-energy gamma-ray emission via the interaction of their produced cosmic rays with the large amount of dense gas within this type of galaxy. Observations of IC 10 X- system and the IC 10 starburst galaxy with SHALON telescope are started. First results limiting the fluxes of observed objects are obtained. Detected TeV gamma-ray flux may point at the active accretion in the massive X-ray binary IC 10 X-1 as well as at the generation of emission through the processes in the starburst galaxy leading to the supernova explosions.

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