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# Gamma-ray emission from the old nova GK Per

Nova Persei 1901 (GK Per) is one of the closest cataclysmic variables, also having a shell viewed over the entire electromagnetic spectrum. First, it erupted as a classical nova in 1901 and has been associated with the light echo. The central binary consists of a magnetic white dwarf and a K-2 type subgiant. Hard X-ray pulsed emission detected by EXOSAT is evidence of the active interaction within the system of the binary and accretion disc that may provide conditions for the generation of high-energy emission. The optical data demonstrates the interaction between the nova ejecta and the ambient gas. In the radio range, a remnant of this nova is detected in non-thermal, polarized radio emission with a morphology resembling the optical shells. Results of these observations show the existence of shocked interstellar material. In X-rays, Chandra discovered the synchrotron emission from the nonthermal electrons in the reverse shock zone. It assumes that GK Per Nova shell is a site where energetic electrons are produced by diffusive shock acceleration. It makes GK Per a candidate for a source of very high-energy gamma-ray emission due to the accelerated particles in the reverse shock region. In the long-term observations of the Perseus region with SHALON, the TeV gamma-ray emission of classical nova GK Per was detected. Two TeV gamma-ray emission regions were revealed: the main one coinciding with the position of the central cataclysmic variable star in GK Per and the weak emission of the shell, which is also observed in X-ray by Chandra. The collected experimental data provides an opportunity to study a wide range of phenomena arising during the interaction of the components of the binary system of the cataclysmic variable, as well as the shell left from the nova ejecta.

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