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TeV and X-ray emission from the 50-year period binary PSR J2032+4127/MT91 213 during periastron passage

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We report on the observations of the pulsar/Be binary system PSR J2032+4127/MT91 213 which was recently discovered at TeV and X-rays energies with MAGIC, VERITAS and Swift-XRT. This is the second gamma-ray binary in which the nature of the compact object is known. The system was detected at TeV energies during the periastron passage, which took place in November 2017. This observation was a once-in-a-lifetime opportunity due to the 50-year orbital period of the pulsar around the Be star. Our observations covered from 18 months prior to periastron passage to one month after. This allowed to study not only the pulsar/Be interaction but also the extended source TeV J2032+4130, most likely a PWN potentially associated with the pulsar. The observations revealed a cut-off in the TeV spectrum of the binary and high flux variability on a daily basis. The X-ray observations also revealed strong variability. Significant revision of the existing models is required to explain the detected TeV emission.

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