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H.E.S.S. Observations of the 2021 PSR B1259-63 Periastron

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PSR B1259-63 is a gamma ray binary system, hosting a confirmed pulsar in an eccentric, 3.4 year, orbit around an O9.5Ve star (LS 2883). We report results obtained in the TeV domain with H.E.S.S., from an extensive observation campaign of the 2021 periastron period. The data set comprises of over 100 hours of data spanning six months and therefore permits an unprecedented insight into the behaviour of the system at TeV energies. In the X-ray and GeV domains, the source exhibited distinct differences in its emission behaviour in 2021 than in previous periastron passages. Specifically, while the impact of the two disk crossings of the pulsar around periastron are observed in X-rays as usual, albeit with somewhat lower fluxes, a third peak has appeared at $t_p + 30$ -d; a point around which in the past a GeV flaring event regularly occurred. Conversely, the GeV flaring event in 2021 was significantly delayed. We present the results of an X-ray/TeV light curve correlation study as well as studies of the TeV spectral variability during the periods of the third X-ray peak and the GeV flare.

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