

Induced Compton gamma radiation formed in the pulsar vacuum gap

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According to the EGRET data [1], there is a powerful gamma radiation from a number of pulsars. In our model [2], such radiation can arise in the pulsar vacuum gap due to inverse Compton scattering of powerful low-frequency radiation by accelerated electrons. The low-frequency radiation is generated in the discharges in the gap which operates as a cavity-resonator. Our model allows us to relate the intensities and spectra of the gamma and radio emissions, corresponding to the observational data for some pulsars. The induced processes affect high radiation energy densities. They lead to a saturation effect in the gamma radiation intensity. The induced processes affect also the gamma ray spectrum, producing deviations from power-law spectrum [2] at low energies of gamma quanta.

References

- [1] P.L. Nolan, J. M. Fierro, Y. C. Lin et al., *Astron. Astrophys. Suppl. Ser.* 120, 61 (1996)
- [2] V. M. Kontorovich, A. B. Flanchik, *ArXiv: 0801.0057* (2008)