Relaxed States in Pulsar Lower Magnetosphere

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We study the possibility of the existence of Beltrami–Bernoulli relaxed states in Pulsar lower magnetosphere based on the fully relativistic general theory of unifying the electromagnetic and fluid fields developed in [1]. The essence of this encompassing formalism is the construction of a fully antisymmetric Generalized Vorticity tensor spatial components of which define a generalized vorticity. Using the theory adopted for the compact astrophysical objects with dense degenerate plasma [2] we extended the model equations including the Gravity Effects. These equilibrium states are studied to show the existence of new energy transformation pathways converting, for instance, the degeneracy energy into fluid kinetic energy or radiation energy. The relevance to compact astrophysical object like neutron star and its lower magnetosphere is emphasized.

References

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