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Recent progress in understanding of the physics of radio pulsars

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Recent progress in understanding the physics of radio pulsars

Radio pulsars, discovered 57 years ago, remain one of the profound puzzles of the modern astrophysics, as we still lack self-consistent quantitative models of emission processes in pulsar magnetospheres. However, the advent of powerful computers and significant improvements in numerical techniques for modeling relativistic plasma resulted in the creation of reliable numerical models of pulsar magnetospheres, what gave us hope to solve the problem of pulsar emission mechanism(s) in the foreseeable future. In this talk, I will review our current understanding of the physics of pulsar magnetospheres, highlight the most recent results of modeling physical processes in pulsar magnetospheres, and describe a few ways towards the solution of the pulsar emission mechanism(s) problem.

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