Fundamental physics with pulsars

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Résumé

Pulsars, rapidly-rotating and highly-magnetized neutron stars born in supernova explosions of massive stars, are useful probes for a wide range of physical studies. For instance, radio pulsar timing measurements allow unique tests of relativistic gravity, or constraints on the equation of state of superdense matter. Pulsar surveys such as those conducted by Square-Kilometre-Array (SKA) pathfinders or by the SKA in the future provide us with an array of new clocks at large distances, acting as the arms of a cosmic gravitational wave detector. In this presentation I review some of the main applications of pulsar studies to fundamental physics, as well as the prospects for the SKA.

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