

The Structure and Signals of Neutron Stars, from Birth to Death



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Azimuthally-structured radio beams of pulsars

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There is a growing evidence that radio beams of some pulsars are azimuthally-structured. When viewed down the dipole axis, the beam resembles spokes in a wheel, with narrow emission stripes spreading away from the dipole axis. I will present objects for which the spoke-like model describes their profiles more successfully than the traditional conal geometry. Further from the dipole axis, the stripes do not widen as would be expected for a structure limited by lines of fixed magnetic azimuth. Hence the mathematical formulae that describe the beam do not result from a simple projection of dipolar field lines on the sky. With the ambiguity of pulsar geometry determination through the gamma-ray- or polarisation-based methods, the task is hindered by the unknown radio beam geometry, and the conal interpretation of profiles can be misleading.

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