



Contribution ID: 318

Type: Poster

## Pulsar J1906+0746 at FAST: a unique exploration of radio-pulsar beam maps

*Friday, 15 December 2023 15:44 (1 minute)*

PSR J1906+0746 is a young binary pulsar with a spin period of  $P \sim 144$  ms in a very short 4-hr orbit around another neutron star. It provides a great opportunity to study both the relativistic spin-precession predicted by General Relativity (GR), and the little-understood radio pulsar emission in a single source in a self-consistent way. Discovered with Arecibo in 2004, it showed both a “main pulse” (MP) and “interpulse” (IP), indicating a nearly orthogonal geometry where emission from both magnetic poles is visible. The emission is highly polarised. The unique geodetic precession of this young pulsar can be used to demonstrate the validity of the geometrical model of pulsar polarisation as well as gravity theories. Now,  $\sim 60$  hours of highly sensitive FAST observations in 2022, 2023 and 2024 will allow us to derive more accurate timing results including spin parameters, Keplerian and Post-Keplerian (PK) parameters, and produce updated emission beam maps. In this poster, we introduce the scientific interests and opportunities of this pulsar system, and present the current status of J1906+0746 timing using FAST data.

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**Session Classification:** Poster