

FAST Proposal Coverpage

Last updated: 01/10/2019

Project Name:

Resolving the emission region of PSR B1957+20 using plasma lensing

Project Summary:

(A 1 paragraph summary of your project, including its scientific goals and how you will address them. This information will be potentially public.)

Plasma lensing effects caused by outflows of the companion star have been detected in single pulses from PSR B1957+20. Such lensing effects, for the first time, resolved the emission region of the pulsar, and led to important constraints on plasmas lenses, outflow velocities and linked fast radio bursts with pulsar single pulses. However, previous Arecibo observations are limited by the sensitivity and narrow bandwidth at low frequencies. As the most sensitive radio telescope in the world, the wideband of 19-beam receiver provide us the unique opportunity to study plasma lensing at 1.4GHz. Such observations will enable us to put the tightest constraints on the lenses and map the magnetosphere of PSR B1957+20, and shed new lights on pulsar emission mechanism and the origin of fast radio bursts.