Proposal Abstract:

Studying young pulsar profile evolution is vital for understanding magnetospheric dynamics, neutron star structure, polarization properties, emission models, and stellar evolution. Changes in pulse shape and intensity unveil emission mechanisms, magnetospheric currents, and particle cascades. Correlated spin-down rate and profile changes reveal magnetosphere-interior interactions, informing about superfluids, glitches, and phenomena within neutron stars. Polarization fraction variations provide insights into emission mechanisms and magnetosphere geometry. Comparing observational data and model predictions refines emission models. Monitoring profile evolution informs about evolutionary processes, age, rotation, and magnetic field evolution. Following our previous A-ranking proposal (2020-PT0070 and PT2023_0013), we propose to conduct a quick polarization census on a sample of 5 young pulsars. We aim to study the long-term pulse profile evolution of these young pulsars. With only a total of 12.5 hours of FAST observations.