

Proposal Abstract:

Some pulsar candidates were discovered during the search for pulsars in supernova remnants. However, we cannot confirm if they are real pulsars, so further observations are needed for confirmation. Since pulsars in supernova remnants are young pulsars, the search for young pulsars in supernova remnants can help us constrain the birth properties of neutron stars by studying the connection between pulsars and supernova remnants, such as period, magnetic field, luminosity, velocity profiles, and pulsar braking index. The measurement of a pulsar's braking index is crucial for understanding the mechanism behind the spin down of pulsars. For example, Gelfand et al. constrained the initial spin period of the neutron star in Kes 75 by fitting the observed characteristics of Kes 75 with the prediction of the pulsar wind cloud evolution model in the supernova remnants. Yao et al. utilized the pulsar in the supernova remnant S147 to discover evidence of three-dimensional spin-velocity alignment in a pulsar.