

Title

Measuring the massive white dwarf in PSR J1227-6208

Abstract

PSR J1227-6208 is a recycled pulsar with a massive white dwarf companion. Previous measurements from Parkes and MeerKAT observations have shown that the white dwarf mass ranges from 1.21 to 1.47 M_{\odot} , putting it among the most massive known ones. If the true mass is above 1.38 M_{\odot} , it would have profound implications on the placement of the Chandrasekhar limit. However, the timing precision is limited by the DM timing noise. We propose regular observations and two orbital campaigns with the MeerKAT S-band receivers during the following four years to further constraints of the post-Keplerian parameters and the component masses. We aim to add these observations to the already existing 11-year-long timing baseline, of which the later 5 years already include high-precision MeerKAT data. After four years of further timing, we predict an uncertainty on the masses smaller than 0.01 M_{\odot} based on simulations.