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Abstract:

We propose to use FAST to observe two peculiar binary pulsar systems: PSR B2303+46 in which the pulsar formed after the white dwarf (WD) and PSR J1954+2529 whose evolutionary mechanism could be like PSR B2303+46. The high-precision observations from FAST can help us understand the special evolution channel through which these binary systems are formed. There are only two confirmed neutron star-WD systems that WD formed first, so its special evolutionary mechanism is worth understanding. The sensitivity of FAST could drastically improve the timing of these systems, potentially detect Shapiro delays, and accurately detection their polarizations. The combination of these results could lead to precise measurements of the binary systems' masses, eccentricity and geometry, and in-term could lead to a much better understanding of the stellar evolution and the birth of the pulsar in these special systems.