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Abstract:

Relativistic double neutron star systems are some of the best gravitation laboratories. In most cases, pulsar timing only offers us a chance to precisely measure the DNS's projected orbit. This problem can be alleviated in rare cases when the pulsar's scintillation can be detected. In the previous round, we have observed a variation of the scintillation arcs from the DNS J1518+4904, and arcs from 13 observations among the previous projects are recognizable. The present result suggests both the binary system and the earth motion have remarkable modulation to the arc variation. We try to eliminate the earth's influence by fitting the arc variation in a year. Since the previous observation does not cover a complete year, the earth's motion modulation keeps unresolved. Thus we propose to continue the observation to roughly cover the earth's motion orbit. It will enable us to collect critical data points for a clear determination of the system's orbit. Besides, we also found other interesting scintillation phenomena. Such as the appearance of the third arcs and the structural separation of the know outer arcs. Further observation will help us confirm these discoveries and study the structure of scintillation screens.