

In Pulsar Timing Arrays (PTAs), we are timing millisecond pulsars to detect low-frequency gravitational wave (GW) signals. GWs affect the times of arrival (TOAs) of radio pulses. The pulsar timing process involves a transformation of TOAs to the quasi-inertial solar system barycenter frame. This step requires that the orbits of Solar System bodies implemented in planetary ephemerides be known to high accuracy. These ephemerides are produced, amongst others, by IMCCE (Institut de mécanique céleste et de calcul des éphémérides) from a numerical integration of planetary motions fitted to the observational data. My current project concerns the effects of planetary ephemeris imperfections on Pulsar Timing Array results by using INPOP (Intégrateur Numérique Planétaire de l'Observatoire de Paris) data. We statistically model the uncertainties in the ephemerides and analyse their influence on the pulsar timing results. I will present some preliminary results obtained with the last generation of ephemerides, INPOP17a.