

Siyuan Chen (Orléans University): 25 years of European Pulsar Timing Array

jeudi 28 janvier 2021 11:10 (30 minutes)

Pulsar Timing Array (PTA) experiments aim to detect nHz gravitational waves from supermassive black hole binaries. This is done by looking for correlated variations of the times of Arrival across an array of ultra-stable millisecond pulsars. Regular observations have been taken and collected over the last 2 and more decades. Three established PTA collaborations: the North American Nanohertz Gravitational Wave Observatory (NANOGrav), the Australian Parkes PTA (PPTA) and the European PTA (EPTA), as well as emerging PTA collaborations from India, China and South Africa all work together in the International PTA consortium towards the common goal of detecting low frequency gravitational waves.

The EPTA can build on the history of European pulsar observations and has therefore a long timespan of PTA observations of up to 25 years. There are 5 major European telescopes: Effelsberg in Germany, Lovell in the UK, Westerbork in the Netherlands, Sardinia in Italy and the Nancay Radio Telescope (NRT) in France. The NRT is a vital part of the EPTA providing a large fraction of the European data. In this talk, I will present some of the most recent results of the searches from PTA collaborations with a focus on the results from the 25 years of EPTA data and the astrophysical interpretation.