

BabyWR: White Rabbit in Gravitational Observatories:

Saturday 8 October 2022 17:00 (30 minutes)

A Gravitational Observatory is a large interferometer for detection of gravitational waves. The timing system of the Virgo European Gravitational Observatory near Pisa will be upgraded. A White Rabbit demonstrator was designed to validate White Rabbit in the Virgo timing system. Currently a pathfinder experiment for Einstein Telescope (ET-Pathfinder) is under construction in Maastricht (NL) as a first step towards future Einstein Telescope (ET). Throughout these Gravitational Observatory infrastructures many clocks are needed. Clocks need deterministic phase, some clocks need to be ultra low phase noise. We believe that BabyWR, a small plugin module with minimal functionality, will be an easy and cost effective solution for the many clocks that will be needed in these Gravitational Observatories. BabyWR will generate a 1PPS and a low phase noise 10MHz ($< 100\text{dBc/Hz}@10\text{Hz}$). Optionally a more expensive high performance external oscillator can be used to improve phase noise for demanding clocks. Third parties and companies can profit from this implementation as well by re-using the design and/or bringing the design to the market.