



ID de Contribution: 31

Type: Poster

## Boosting the sensitivity of next generation gravitational wave detectors through quantum correlations

Frequency dependent squeezing is a crucial and well established technology in current gravitational wave detectors. Future detectors such as Einstein Telescope will heavily rely on this technology since it is the only way to go beyond the standard quantum noise limit and increase the sensitivity of the detectors when we cannot increase the power. Current detectors such as VIRGO and LIGO only require a linear rotation of the squeezing ellipse with frequency. However future gravitational wave detectors are being conceived with detuned signal recycling mirrors. For these detectors the rotation of the squeezing ellipse cannot be linear anymore. To realise this non trivial rotation of the squeezing ellipse several configurations are being considered, requiring at least two filter cavities or one coupled filter cavity. We propose the first experimental demonstration of this frequency dependent squeezing with non trivial rotation of the squeezing ellipse while testing the robustness of these two filter cavity configurations.

### Speaker information

PhD 2nd year

**Auteur:** AHREND, Isander-Louis

**Classification de Session:** Poster

**Classification de thématique:** Physics of the Universe