

## Squeezed light – now exploited by all gravitational-wave observatories

Light with squeezed quantum uncertainty allows for the sensitivity improvement of laser interferometers. Since 2010, the gravitational-wave (GW) detector *GEO600* has been using squeezed light in all of its searches for GWs [1]. The successful sensitivity improvement triggered the implementation of squeezed light sources also in *Advanced LIGO* and *Advanced Virgo*. On April 1<sup>st</sup>, 2019 these observatories started their third observational run. Since then they have been detecting more than one GW event per week. An increased event rate of up to 50% is due to the exploitation of squeezed states of light [2,3]. Squeezed light is fully described by quantum theory, however, observations on squeezed light represent physics that is not self-evident. I present a description of why a squeezed photon counting statistic is rather remarkable [4].

[1] LIGO Scientific Collaboration, *Nature Physics* **7**, 962 (2011);

[2] M. Tse *et al.*, *Phys. Rev. Lett.* **123**, 231107 (2019);

[3] F. Acernese *et al.*, *Phys. Rev. Lett.* **123**, 231108 (2019);

[4] R. Schnabel, *Annalen der Physik* **532**, 1900508 (2020).