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Ground and space-based laser interferometry for precision metrology

We trace the evolution of laser metrology from the first laser rangefinders built in 1961 to spectacularly successful science applications: the LIGO gravitational wave detector and the Laser Ranging Interferometer of the Earth-orbiting GRACE Follow-On mission. Methods for reducing imperfections in the apparatus and the effect of fundamental noise sources are described, including laser frequency noise and heterodyne interferometry clock noise.

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