

Ernst Rasel - Interferometry with Bose-Einstein condensates on ground and in space

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Research on light-pulse atom interferometers is motivated by the interest in accurate and long-term stable inertial measurements. Important sensitivity levers for the latter features are the extension of the interferometry time and the transfer of large numbers of photon momenta. Ultra-cold atomic ensembles are a promising resource for light-pulse interferometers considering all aforementioned aspects. We explore collimated Bose-Einstein condensates generated on atom chips as ultra-slowly expanding gas for light-pulse interferometry. I will report on the status of experiments on ground, e.g. of our future gravimeter and in free-fall facilities, such as the Bremen drop and gravitower as well as the Einstein elevator, and in space, i.e. during the last sounding rocket mission.

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