

Status of optical clocks and prospects for chronometric geodesy

Sébastien Bize
(sebastien.bize@obspm.fr)

Optical clocks have fractional frequency uncertainty of 1E-18 and will continue to progress. Coherence optical fiber links over distances of thousands of kilometers can support comparisons to 1E-19 or better and are technologically mature. Clocks comparisons at this level of uncertainty can provide measurements of gravitational potential difference at the 1 cm level. This approach can provide novel data for geodesy and Earth science. In my presentation, I will review the status of clocks and clock comparison capabilities. I will discuss theoretical studies of how clock data can be combined with other data to improve gravity field models. I will discuss possibilities to move toward pilot experiments in chronometric geodesy.