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Time-delay interferometry for LISA

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Olaf Hartwig for the LISA Consortium

The Laser Interferometer Space Antenna (LISA) is a constellation of 3
spacecraft orbiting the sun. They form an almost equilateral triangle with arm lengths of 2.5 million kilometers. These arms can differ in length by up to 25000km, such that a traditional Michelson-like interferometer configuration does not reduce laser noise effectively. Thus, LISA will rely on a post-processing technique called time-delay interferometry (TDI), which combines data streams from different spacecraft to synthesize virtual equal-arm interferometers. We present here an overview of the TDI technique, with particular emphasis on how to include corrections for the three independent spacecraft clocks in constructing the final TDI observable.

Primary author: HARTWIG, Olaf

Presenter: HARTWIG, Olaf

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