LISA: The Laser Interferometer Space Antenna

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ABSTRACT

The Laser Interferometer Space Antenna (LISA) is a deep-space mission, jointly proposed to the National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA), to detect and study gravitational radiation in the millihertz frequency band [1].

LISA will use coherent laser beams exchanged between three remote, widely separated, spacecraft, and onboard frequency standards for measuring phase differences between the received and transmitted laser beams. By properly combining the one-way measurements collected by the three spacecraft it is possible to simultaneous synthesize several interferometric observables [2-5]. All are independent of lasers and frequency standards phase fluctuations, but have different couplings to gravitational waves and to the various LISA instrumental noises.

An overview of this new, exciting, and technologically challenging deep space mission, with special emphasis on its frequency and timing requirements, will be presented.

REFERENCES

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