

THE LASER INTERFEROMETER SPACE ANTENNA

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The Laser Interferometer Space Antenna (LISA) is a planned space mission to detect and accurately measure [gravitational waves](#) from astronomical sources. LISA was originally conceived as a joint effort between the [United States](#) space agency [NASA](#) and the [European Space Agency](#) (ESA). However, on April 8th 2011, NASA announced that it would likely be unable to continue its LISA partnership with the European Space Agency, due to funding limitations. ESA is planning to begin a full revision of the mission's concept, renamed the Next Gravitational -Wave Observatory (NGO), with selection of the winning [Cosmic Vision](#) L-class mission candidate due in February 2012.

If launched, LISA will be the first dedicated space-based gravitational-wave detector; it will measure [gravitational waves](#) by using laser [interferometry](#) to monitor the fluctuations in the relative distances between three spacecraft, arranged in an [equilateral triangle](#) with 5-million-kilometer arms, and flying along an Earth-like [heliocentric orbit](#).^[31] Passing gravitational waves create oscillations in the inter-spacecraft distances, as measured by light, in directions transverse to the direction of wave propagation. LISA will be sensitive to waves in the [frequency](#) band between 0.03 milliHertz to 100 milliHertz, including signals from [massive black holes](#) that merge at the center of [galaxies](#), or that consume smaller [compact objects](#); from binaries of compact stars in our Galaxy; and possibly from other sources of cosmological origin, such as the very early phase of the [Big Bang](#), and speculative astrophysical objects like [cosmic strings](#) and domain boundaries.