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Hearing Voices in the Dark: Probing the gravitational wave Cosmos from space

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The advent of broadband gravitational wave detection using laser interferometry is a transformative technology that for the first time makes the gravitational spectrum a tool for astronomers to probe the Cosmos. Interferometric observatories in space, with armlengths millions of kilometers long, will be sensitive to low-frequency radiation in the millihertz regime of the gravitational wave spectrum. This part of the spectrum is alive with signals from massive black hole binaries, interacting binaries in the galaxy, the capture of stellar mass objects by supermassive black holes in galactic nuclei, and possibly stochastic backgrounds of gravitational radiation of cosmological origin. In this talk, we will discuss the science that low frequency gravitational observations of the Cosmos will reveal.