

## Gravity Has a Story to Tell: Using LISA to observe the low-frequency gravitational wave Cosmos



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Late in the next decade, the first gravitational wave observatory in space will be launched. For the past twenty years, enormous work has been completed on an observatory concept known as the Laser Interferometer Space Antenna (LISA), comprised of a constellation of spacecraft that operate in concert as a multi-million kilometer armlength interferometer.

LISA will observe gravitational waves at kilosecond periods, where here are a wide variety of high energy astrophysical systems that are strong gravitational wave radiators. These include massive black hole binaries, interacting ultra-compact 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. These sources will often be detected in large numbers, enabling population studies. Strong individual sources will also allow detailed characterization of the bulk motion of matter in these systems, and enable new, detailed tests of physics in strong gravitational fields. In this talk, we will illustrate in several vignettes of the astrophysical systems we expect to observe and discuss the science that low frequency gravitational wave observations of the Cosmos will reveal.

Wednesday

April 19

4:00 P.M.

Rm 118 NSH

Refreshments  
in Rm 202 NSH  
@ 3:30 pm