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Space gravitational wave antenna DECIGO

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DECi-hertz Interferometer Gravitational-wave Observatory (DECIGO) is a future Japanese space gravitational-wave antenna with a frequency band of 0.1 Hz to 10 Hz. DECIGO aims at detection of primordial gravitational waves, which could have been produced during the inflationary period right after the birth of the universe. There are many other scientific objectives of DECIGO, including the direct measurement of the acceleration of the expansion of the universe, and reliable and accurate predictions of the timing and locations of neutron star/black hole binary coalescences. DECIGO consists of four clusters of observatories placed in the heliocentric orbit. Each cluster consists of three spacecraft, which form three differential Fabry-Perot interferometers with an arm length of 1,000 km. Three clusters of DECIGO will be placed far from each other, and the fourth cluster will be placed in the same position as one of the three clusters to obtain the correlation signals for the detection of the primordial gravitational waves. In this presentation, we will explain the aimed sciences, the mechanical and optical design, and the current status of DECIGO.

Primary authors: Prof. KAWAMURA, Seiji (Nagoya University); DECIGO-WORKING GROUP

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