



Contribution ID: 57

Type: poster

## Demonstration of a dual-pass differential Fabry–Perot interferometer for future interferometric space gravitational wave antennas: DECIGO and B-DECIGO

*Wednesday, 19 May 2021 16:14 (1 minute)*

A dual-pass differential Fabry–Perot interferometer (DPDFPI) is one candidate of the interferometer configurations utilized in future Fabry–Perot type space gravitational wave antennas, such as Deci-hertz Interferometer Gravitational wave Observatory (DECIGO) and B-DECIGO. In this poster, the working principle of the DPDFPI has been investigated and necessity to adjust the absolute length of the cavity for the operation of the DPDFPI has been found. In addition, using the 55 cm-long prototype, the operation of the DPDFPI has been demonstrated for the first time and it has been confirmed that the adjustment of the absolute arm length reduces the cavity detuning as expected. This work provides the proof of concept of the DPDFPI for application to the future Fabry–Perot type space gravitational wave antennas. For more detail, please also see our recent paper: Koji Nagano et al 2021 Class. Quantum Grav. **38** 085018.

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**Session Classification:** Poster session 1

**Track Classification:** Next detectors: Space missions