



Irfu

Institut de recherche
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de l'Univers

**Séminaire
DPhP**

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CEA-Saclay Bât. 141, salle André Berthelot

SAGE : A low cost space mission for IMBH mergers

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SAGE (Sagnac interferometer for Gravitational wave) is a project for a fast track space mission based on multiple CubeSats in geosynchronous orbit. SAGE would be a much simpler version of LISA : i) It would target frequencies between 10 mHz and 1 Hz, perfectly suited for GEO orbits. ii) Solar wind and radiation pressure are small enough at these frequency to allow detections without the need of test masses. iii) Space access with CubeSat is cheap (1m€) using the "piggy back" scheme. With that in mind, we are proposing a mission which cost could be maintained below 50m€, and could be realistically put to orbit within 5 to 10 years. It would leverage on compact technologies that are used for ground based interferometry : integrated optics, LiNbO3 modulators, etc... Technically, the CubeSats would create a triangular Sagnac interferometer with 140.000 km roundtrip arm length. The SAGE observatory would sense black hole mergers in the 10^4 to 10^6 solar masses range up to a luminosity distance of 500 Mpc. However, with LISA in the starting blocks, is there space for another mission ?

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Martine Oger, tél. 01 69 08 23 50, e-mail : martine.oger@cea.fr. (délai de 7 jours).