



Contribution ID: 11

Type: **Talk**

Validation of the Interferometric Detection System of LISA on ground

The French contribution to the LISA Consortium, specifically on the instrumental aspect, centers on developing optical ground support equipment (OGSE) for the validation of LISA's performance before it takes flight. More specifically, one of the tasks of the French community is to test and validate the performance of the Interferometric Detection System (IDS).

The IDS Test Set-Up is currently under development in order to verify that picometric stability is reached within the IDS (EM and QM) and characterize the TTL Rx tilt-to-length coupling coefficient of the interferometers of the OB (coupling between the relative angle between beams and the length readout of the interferometer).

The IDS Test Set-Up is composed of several sub-assemblies including the IDS, the Beams Simulator and the Test Mass Simulator (+ all the support equipment). The APC laboratory is in charge of the development of the Beams Simulator optical bench that is intended to simulate and stimulate the interface with the MOSA on the distant spacecraft and the adjacent MOSA on the local spacecraft.

For this contribution, I will briefly present the functioning principle of the Beams Simulator and the overall IDS Test Set Up, I will then present the optical simulation tool set developed in order to verify that specification are well set and verify that the bench as designed will reach its planned performance and be able to measure the performance of the LISA instrument.

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Session Classification: Planary