Poster Session #F
Gravitational Wave detectors and other sources

F15

Silica Fibers for large masses upgrade on Advanced Virgo Plus

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The observation of gravitational waves is highly influenced by the detectors sensitivity, that is limited at low frequencies (10 -100 Hz) by the thermal noise. For this reason, the monolithic suspensions are one of the most important upgrades of the interferometric detectors including Advanced Ligo (aLigo) and Advanced Virgo (AdV). The target sensitivity for the new updates of Advanced Virgo Plus (AdV+) pass through larger reference masses, and this choice requires, among other things, a re-design of the silica fibers, and a new capability to produce and test them, in order to minimize the thermal noise in the band of interest and to fit the load constrains. This work will present the mechanical design of the silica fibers for large mass update and the desired features in terms of mechanical stress, thermal noise and resonant frequencies. Moreover some preliminary measures of the fibers profile and the breaking stress will be shown and compared with the design constrains. Finally the impact of the new silica fibers on the sensitivity of the Virgo interferometer will be discuss.