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The Advanced Virgo monolithic fused silica suspension

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The detection of gravitational waves is one of the most challenging prospects faced by experimental physicists. Suspension thermal noise is an important noise source at operating frequencies between approximately 10 and 30 Hz, and represents a limit to the sensitivity of the ground based interferometric gravitational wave detectors. Its effects can be reduced by minimizing the losses and optimizing the geometry of the suspension fibre and its attachment system. In this poster we will present the design of last suspension system for use in the Advanced Virgo (AdV) detector, describing the design of the double stage monolithic suspension. With the help of a finite element model, we also present a full thermal noise analysis, taking into account for the precise geometry of the fibers attachment systems on the suspension elements. We shall demonstrate the suitability of this suspension for installation in AdV.

Collaboration

Paola Puppo on behalf of the monolithic suspensions team

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