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Suspension design for Cosmic Explorer

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Cosmic Explorer requires an unprecedented level of isolation from the ground and from thermal noise. If we want to reach the design sensitivity of $10^{-23}\mathrm{Hz}^{-1/2}$ down to 5Hz, scaling up the LIGO A+ technology might not be enough, and new designs, as well as new technologies, need to be investigated.
One possibility is Cosmic Explorer 2, or CE2, which either uses a $1\mu\mathrm{m}$ laser with fused silica test masses at room temperature, or a $2\mu\mathrm{m}$ laser with silicon test masses at 123K. To achieve low frequency sensitivity, the resonances of the test mass suspensions need to be kept below a few Hertz as well.
During this talk, we will present different design ideas for the CE2 suspensions. These concepts have been developed with CE2 stringent requirements in mind, trying to anticipate the state-of-art technology for silicon materials.

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