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E-TEST: A Compact Isolation Concept for Future Einstein Telescope

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This study presents a low frequency isolation system in the framework of E-TEST project which is a research facility for Einstein Telescope. The isolation system combines a passive inverted pendulum and an active inertial platform. The design of this isolator allows reducing the overall height of the isolation system. We address the isolation system design, its dynamics and the control strategy applied. The simulation results show that the seismic noise could successfully be reduced by about 3 orders of magnitude at 1 Hz in horizontal when the control is applied. To avoid spoiling the performance at high frequency, the inertial platform is designed in such a way that the first flexible internal mode appears above 300 Hz.

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