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**High frequency gravitational wave detection with levitated nano objects.** GEORGE WINSTONE, NANCY AGGARWAL, SHANE LARSON, VICKY KALOGERA, ANDREW GERACI, Northwestern University — We present updated theoretical results for detecting gravitational waves with a levitated nano object optically suspended within a cavity as a complementary instrument to experiments like LIGO. Our experimental proposal is designed to detect gravitational waves in the 10's to 100's of Kilohertz bandwidth on a tabletop scale. The planned experimental setup is detailed and several optimizations to the proposal are outlined. Finally, the proposal is placed within the context of newly analysed predicted sources within such a frequency band.

George Winstone
Northwestern University

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