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【436】 Measurement of Gravitational Coupling between Millimeter-Sized Masses

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Gravity continues to pose some of the most outstanding open problems to modern physics: it remains resistant to unification within the standard model and its underlying concepts appear to be fundamentally disconnected from quantum theory.

Thus far, testing gravity involves mainly macroscopic masses on the kg-scale and beyond. Here we show gravitational coupling between two gold spheres of 1 mm radius, entering the regime of sub-100mg sources of gravity. Our results extend the parameter space of gravity measurements to small single source masses and small gravitational field strengths. Further improvements will enable the isolation of gravity as a coupling force for objects below the Planck mass.

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