

Abstract Submitted  
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**The Configuration Space Symmetries in the Quantum Bouncer**

DAVID LOCKERBY, American University — We study a few-body particle system with contact interactions in a quantum bouncer potential well. In principle, the strength of the gravitational field can be extracted from the one-particle energy spectrum, but this is currently experimentally impractical. This project explores how varying the number of particles and tuning the particle interaction strength can improve measurement sensitivity. The analysis exploits the additional symmetries of configuration space that occur either in the unitary limit of contact interactions or when the bouncer potential is decorated with additional infinite delta-barriers.

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