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Newtonian Binding from Lattice Quantum Gravity

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Quantizing gravity is one big problem of theoretical physics and it's well-known that general relativity is not renormalizable perturbatively. Yet studies of quantum gravity on lattice have given evidence of the asymptotic safety scenario in which there is a strongly coupled UV fixed point. In this talk, I will talk about our study of the interaction of two scalar particles propagating on Euclidean dynamical triangulations working in the quenched approximation, which involves calculating the binding energy of a two-particle bound state. After taking the infinite-volume, continuum limit of the lattice calculation, our result is compatible with what is expected for the ground state energy by solving the Schrodinger equation for Newton's potential, providing further evidence for EDT as a theory of gravity in four dimensions. I will also show how we can determine the lattice spacing of EDT calculation for the first time.

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