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Work drives time evolution

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We propose the idea that time evolution of quantum systems is driven by work. The formalism presented here falls within the scope of a recently proposed theory of gravitating quantum matter where extractible work, and not energy, is responsible for gravitation. Our main assumption is that extractible work, and not the Hamiltonian, dictates dynamics. We find that expectation values of meaningful quantities, such as the occupation number, deviate from those predicted by standard quantum mechanics. The scope, applications and validity of this proposal are also discussed.

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