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Monte Carlo calculation of bound states in quantum mechanics: regular potentials MARIA ANABEL TREJO, JAMES P EDWARDS, URS GERBER, CHRISTIAN SCHUBERT, AXEL WEBER, Univ Michoacana de San Nicolas de Hidalgo — The calculation of bound state energies by a direct or variational Monte Carlo evaluation of the quantum mechanical path integral has a long history. Here, we present a new approach that is an adaption of techniques originally developed in quantum field theory. It allows us to obtain ground state energies from the large - time limit of the propagator for a large class of potentials. After discussing various algorithms for the generation of time-discretized paths, we present benchmark results for two non-singular potentials for which the propagator is known in closed form, the harmonic oscillator and the symmetric Pöschl-Teller potential.

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