Monte Carlo calculation of bound states in quantum mechanics: singular potentials URS GERBER, JAMES P EDWARDS, CHRISTIAN SCHUBERT, MARIA ANABEL TREJO, AXEL WEBER, Univ Michoacana de San Nicolas de Hidalgo — In continuation of the talk by M. A. Trejo at this conference, here we focus on the complications caused by singular potentials in a direct Monte Carlo calculation of the path integral representing the propagator in quantum mechanics. A naive time-discretization here usually leads to the unacceptable appearance of exceptional trajectories that dominate in the statistical average. We present a smoothing procedure that remedies this problem, and demonstrate its effectiveness for the case of the Coulomb potential. Finally, we briefly outline an extension of the method to the calculation of bound states in scalar field theory.

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