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**Propagators in Position, Momentum, and Spin Variables** BAILEY

HSU, JEAN-FRANCOIS VAN HUELE, Brigham Young University — Propagators describe the evolution of quantum dynamical systems. Their expression depends on the dimension of the system, on the environment, and on the boundaries. Specific techniques have been developed to calculate the propagators for different functional forms of the potential, which in the case of spinless particles depend on position and momentum. Particles with spin interacting with magnetic fields in Stern-Gerlach-like systems lead to propagators involving position and spin variables. Spin-orbit-like systems combine momentum and spin variables. We investigate the applicability of methods found in the literature to systems that exhibit different combinations of momentum, position, and spin variables.

Jean-Francois Van Huele  
Brigham Young University

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