

Abstract Submitted
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Quantum Particle Dynamics in a Highly Singular 1D-Potential

$U(x) = -\alpha\delta(x) + \beta\delta'(x)$ **Superposed on a Well-Behaved One** NORMAN J.M. HORING, Stevens Institute of Technology, Hoboken, NJ, JAY D. MANCINI, Kingsborough Community College, Brooklyn, NY — We examine the one-dimensional quantum dynamics of a Schrödinger particle in a potential represented by a generalized function of the form $U(x) = -\alpha\delta(x) + \beta d(\delta(x))/dx$ superposed on a well behaved potential $V(x)$. In this, we construct the full, exact Green's function for such a 1D system analytically in closed form, taking account of a spatially variable mass $m(x)$. Our result shows that there can be no electron transmissions through the $\beta\delta'(x)$ - potential, regardless of the presence of the $V(x)$ - potential and $\alpha\delta(x)$, (with $\alpha \neq 0$).

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