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Semiclassical Decoherence in He-Surface Scattering MATTHEW SCHRAM, MIT — The field of Helium-surface scattering has been recently reexamined with great fervor thanks to recent technological advances and a more focused interest in studying issues surrounding decoherence and the quantum to classical transition. Recent work (Schuller et al 2007, Bundaleski et al 2008) has unexpectedly observed diffraction peaks in He-LiF and He-Ag interactions. This raises fundamental questions about the degree of elasticity of these high-energy collisions, and moreover what the scattering particle is coherent "with." We present results using semiclassical gaussian wavepackets to simulate surface scattering and report on the relative contributions on coherence from different types of inelastic interactions.

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