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**Green's functions in equilibrium and nonequilibrium from real-time bold-line Monte Carlo**[1] GUY COHEN, Columbia University, EMANUEL GULL, University of Michigan, DAVID R. REICHMAN, ANDREW J. MILLIS, Columbia University — Green's functions for the Anderson impurity model are obtained within a numerically exact formalism. We investigate the limits of analytical continuation for equilibrium systems, and show that with real time methods even sharp high-energy features can be reliably resolved. Continuing to an Anderson impurity in a junction, we evaluate two-time correlation functions, spectral properties, and transport properties, showing how the correspondence between the spectral function and the differential conductance breaks down when nonequilibrium effects are taken into account. Finally, a long-standing dispute regarding this model has involved the voltage splitting of the Kondo peak, an effect which was predicted over a decade ago by approximate analytical methods but never successfully confirmed by numerics. We settle the issue by demonstrating in an unbiased manner that this splitting indeed occurs.

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