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Transport and spectra in the half–filled Hubbard model HIMADRI BARMAN, VIDHYADHIRAJA SUDHINDRA, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India — We study the issues of scaling and universality in spectral and transport properties of the infinite dimensional particle–hole symmetric Hubbard model within dynamical mean field theory. We have used and reformulated the iterated perturbation theory approach to avoid problems such as analytic continuation of Matsubara frequency quantities or calculating multi-dimensional integrals, while taking full account of the very sharp structures in the Green's functions that arise close to the Mott transitions. We find a "coherence peak" in the dc resistivity of the metallic regime, which appears to be a universal feature occurring at a temperature roughly equal to the low energy scale of the system and agrees qualitatively well with the pressure dependent dc resistivity experiments on Selenium doped NiS_2. Resistivity hysteresis across the Mott transition is found and a direct comparison of the thermal hysteresis observed in V_2O_3 with our theoretical results yields a value of the hopping integral, which we find to be in the range estimated through first-principle methods. Finally, a systematic study of optical conductivity is carried out and the changes in absorption as a result of varying interaction strength and temperature are identified.

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