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Scattering Properties of Bose-Hubbard Hamiltonians with Two and Three Sites MORITZ HILLER, STEFAN HUNN, Department of Physics, Albert Ludwigs University of Freiburg, Germany, TSAMPIKOS KOTTOS, Department of Physics, Wesleyan University, Middletown CT-USA and MPI for Dynamics and Self-Organization, Göttingen-Germany , DORON COHEN, Department of Physics, Ben-Gurion University, Beer-Sheva, Israel, ANDREAS BUCHLEITNER, Department of Physics, Albert Ludwigs University of Freiburg, Germany — We consider a probe particle in a tight binding geometry with two leads and a central site that is coupled to a Bose-Hubbard system consisting of two or three wells (dimer/trimer). In the case of the dimer we find that the resonance widths undergo a sequence of bifurcations resulting from the complexity of the underlying classical phase space structure. For the trimer we show that the statistical properties of the scattering matrix are well described by the random matrix theory predictions for chaotic scattering. The origin of this agreement is due to the fact that inelastic scattering from a chaotic system (trimer) is formally equivalent to elastic scattering in a waveguide that has a chaotic mode space.

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