Resonances for normally hyperbolic trapped sets

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Resonances are complex analogs of eigenvalues for Laplacians on noncompact manifolds, arising in long time resonance expansions of linear waves. We prove a Weyl type asymptotic formula for the number of resonances in a strip, provided that the set of trapped geodesics is r-normally hyperbolic for large r and satisfies a pinching condition. Our dynamical assumptions are stable under small smooth perturbations and motivated by applications to black holes. We also establish a high frequency analog of resonance expansions.

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