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Anton Gorodetski* (asgor@math.uci.edu). *Hyperbolic dynamics and spectral properties of one-dimensional quasicrystals*. Preliminary report.

Dynamical properties of hyperbolic maps (such as Smale horseshoe or Anosov diffeomorphisms) are currently very well studied. It turns out that these properties are closely related to the spectral properties of discrete Schrodinger operators with potentials that are used in physics to model quasicrystalline structures. This connection allows to provide detailed and explicit description of spectral characteristic (fractal dimension of spectrum, density of states measure, optimal Holder exponent, transport exponents etc.) of one-dimensional quasicrystals in terms of dynamical characteristics of a hyperbolic horseshoe (fractal dimension of the hyperbolic set, topological entropy, measure of maximal entropy, Lyapunov exponents, multipliers of periodic orbits). This leads to rigorous proofs of heuristic statements and numerical results that appeared in physics papers in 80s. This is a joint project with David Damanik.

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