

数論セミナー

日時：2019年7月5日（金）16：45 ～

場所：自然科学棟 D509

講演者：高橋 悠樹（東北大 AIMR）

講演題目：Sums and products of Cantor sets and two-dimensional quasicrystal models.

The spectrum of the tridiagonal square Fibonacci Hamiltonians, which is a two-dimensional quasicrystal model, is given by sums of two Cantor sets. We show the existence of an open set of parameters which yield mixed interval-Cantor spectra (joint work with J. Fillman and Y. Yessen). On the other hand, the spectrum of the Labyrinth model, which is another two-dimensional quasicrystal model, is given by products of two Cantor sets. We give the optimal estimates in terms of thickness that guarantee that products of two Cantor sets is an interval, and apply this result to show that the spectrum of the Labyrinth model is an interval for sufficiently small coupling constants. If time permitted, we also consider sums of two homogeneous Cantor sets, and show that for any two homogeneous Cantor sets with sum of Hausdorff dimensions exceeding 1, one can create an interval in the sumset by applying arbitrary small perturbations.

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