

SALZBURG MATHEMATICS COLLOQUIUM

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„Can you pave the plane nicely with identical tiles?“

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Abstract:

Everybody knows that identical regular triangles or squares can tile the whole plane. Even the bees know that identical regular hexagons can tile the plane as well. Is there any other convex domain which can tile the Euclidean plane? Of course, there is a long list of them! To find the list and to show the completeness of the list is a unique drama in mathematics, which has lasted for more than one century, and the completeness of the list has been mistakenly announced not only once! Up to now, the list consists of triangles, quadrilaterals, fifteen types of pentagons, and three types of hexagons. In 2017, Michaël Rao announced a computer proof for the completeness of the list. Much less is known for multiple tilings. Unexpected results have recently been discovered. For example, besides parallelograms and centrally symmetric hexagons, there is no other convex domain which can form any two-, three- or four-fold translative tiling in the plane. However, there are (only) two types of octagons and one type of decagons which can form nontrivial five-fold translative tilings. (Joint work with Qi Yang.)

Thursday, 15:00-15:45

Hörsaal 414, 1. Stock