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Nicolau C Saldanha* (saldanha@puc-rio.br), R Mq S Vicente 225, Depto de Matematica, PUC-Rio, Rio de Janeiro, 22451900, Brazil. *Domino tilings in dimension 3*.

Domino tilings in dimension 2 have been extensively studied and there are several deep and remarkable theorems. Almost without exception, similar problems in dimension 3 or higher are much harder.

In this talk we consider the simplest local move among domino tilings of a given compact region: a flip consists of removing two dominoes and placing them back in a different position. In dimension 2, Thurston proved that any two tilings of a simply connected region can be joined by a finite sequence of flips.

In dimension 3, the question is far subtler. There exists an integer valued invariant under flips, the twist. There are also tilings which admit no flip, and these give us examples of pairs of tilings with the same twist but in different connected components under flips. We prove that, under suitable hypotheses, it is almost always true that, if two tilings have the same twist then they are in the same connected component. Furthermore, sizes of connected components follow a normal distribution.

This includes joint work with C. Klivans, J. Freire and P. Milet.

References:

[arXiv:1912.12102](https://arxiv.org/abs/1912.12102), [arXiv:2007.09500](https://arxiv.org/abs/2007.09500), [arXiv:2007.08474](https://arxiv.org/abs/2007.08474), [arXiv:1702.00798](https://arxiv.org/abs/1702.00798), [arXiv:1410.7693](https://arxiv.org/abs/1410.7693). (Received July 22, 2020)