

Tools for Classifying 3-Dimensional Tilings

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3D Euclidean Space Groups

There are 230 types of 3D crystallographic space groups, i.e. 219 isomorphism types, and 11 pairs that only differ in their left- or right-handedness.

Problem *Given the triangulation of a 3D orbifold Q , in terms of a Delaney symbol (D, m) , assumed to be euclidean.*

How to determine the crystallographic type of the associated group?

Idea: Compute orbifold graph for each group.

groups	tiling	D-symbol	graph
IT001			
IT002			189 different
IT003			graphs,
IT004			of which 175
IT005			correspond to
...	→	→	unique groups
IT228			remainder:
IT229			14 graphs
IT230			44 groups

DeloneTiles - Doliblin and Huson 1996.

ograph - Delgado and Huson 1996.