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Mathieu Dutour Sikirić, Alexey Garber* (alexey.garber@utrgv.edu), **Achill Schürmann**
and **Clara Waldmann**. *Enumeration of five-dimensional Dirichlet-Voronoi parallelohedra.*

In this talk we will report about full classification of combinatorially different five-dimensional Dirichlet-Voronoi parallelohedra for lattices.

The classification of affinely different Delone triangulations (L -type domains) can be done using Voronoi's second reduction theory. It was done completely for small dimensions up to 5. Dimensions 3 and 4 can be done without using the reduction theory, but already in dimension 5 it plays an important role for classification. The classification of five-dimensional L -type domains was made by E. Baranovskii and S. Ryshkov in 1973. They found 221 different triangulations, but later P. Engel in 1998 found that they missed one triangulation.

In this talk we will show how one can extend the Voronoi's reduction theory to find all affinely non-equivalent lattice Delone decompositions and combinatorially different Dirichlet-Voronoi parallelohedra in arbitrary dimension and present our computational results in dimension 5.

Our main result is the following. There are 110244 affine types of lattice Delone triangulations and 110244 combinatorial types of Dirichlet-Voronoi parallelohedra in dimension 5. (Received January 18, 2016)