Seminar/Talk

GeomTop Seminar: "Relaxed Diophantine Equations for Geometric Primitives in Integer Space"

Ranita Biswas
IST Austria (Edelsbrunner group)

Host:

"Relaxed Diophantine Equations for Geometric Primitives in Integer Space"Diophantine equations are polynomial in nature, usually with two or more unknowns, seeking integer solutions. With these equations, one can define algebraic curves and surfaces and can characterize lattice points on them. Geometric interpretations of Diophantine equations are found to enrich "geometry of numbers", and broadly speaking, to a great extent, the upcoming subject of digital geometry. In this talk, certain novel theoretical findings will be presented along with several open problems. As the second part of the talk, Ranita will present some of the recent findings done in collaboration with colleagues from XLIM Lab, University of Poitiers. They have proposed a new non-orthogonal basis to express the 3D Euclidean space in terms of a regular grid, where every grid point, each represented by integer 3-coordinates, corresponds to rhombic dodecahedron centroid. Rhombic dodecahedron is a space filling polyhedron which represents the close packing of spheres in 3D space and the Voronoi structures of the face centered cubic (FCC) lattice. They have proposed the characterization of 3D digital planes and spheres with relevant topological features in this new coordinate system.

Wednesday, March 20, 2019 12:30pm - 01:45pm
Mondi Seminar Room 3, Central Building

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