



COLOQUIO DE MATEMÁTICAS

Discrete Differential Geometry

(A link between the continuous and the computational universe)

Keith Yuan Patarroyo Tovar

LIGUM, Departement d'Informatique et de Recherche Opérationnelle
Université de Montréal

Fecha: Miércoles 28 de agosto de 2019

Hora: 11:10 a.m. - 12:10 p.m.

Lugar: Salón 212, edificio Yu Takeuchi (404)

Resumen

In the search for simple, robust, and efficient tools for geometry processing and physical simulation, the field of Discrete Differential Geometry (DDG) has emerged. What started with building a physical model that is discrete from the ground up and preserves key geometric structures that characterize the actual (smooth) physical system, has been materialized with the help of some of the machinery of Differential Geometry like Conformal Geometry, Integrable Systems, Geometrical Flows, and Optimal Transport. In this talk, we will briefly address the motivation for developing this novel approach and the general process of generating a discrete model for a continuous geometrical quantity. We will also touch upon some of the exciting applications of this research where very specialized tools of hardcore Differential Geometry are helping to advance the fields of computer graphics, physical simulation, fabrication, architecture and discrete models of nature. Some of the technical parts of this talk are based upon the AMS article: A glimpse into Discrete Differential Geometry by Crane and Wardesky.