

## GEOMETRY AND PHYSICS SEMINAR

**Dia 19 Junho 2019 (quarta-feira), às 11h00, sala 6.2.33**

### Darboux integrability of discrete 2D Toda lattices

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**Abstract:** Equations that are known now as the “two-dimensional Toda lattice” have in fact appeared in classical differential geometry in the end of 19th century. Generalized 2D-Toda lattices corresponding to the Cartan matrices of simple Lie algebras are Darboux integrable, that is, they admit complete families of essentially independent integrals along both characteristics. We consider semi-discrete and purely discrete analogs of these systems and prove their Darboux integrability which appears to be a direct consequence of the nature of Toda lattice related to Darboux–Laplace transformations.

If there is enough time, we will also discuss the notion of characteristic algebra which is an algebraic structure that controls the existence of characteristic integrals for a hyperbolic equation and its growth properties describe the behaviour of the corresponding hyperbolic system.