Seminário do CM-UTAD – Linha de Álgebra Geometria

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Tropical algebra (sometimes called max algebra) is a set of real numbers equipped with the maximum operation instead of usual addition and addition instead of usual multiplication. Under these operations this is an algebraic structure called a semiring. Semirings naturally appear in different problems of combinatorics, communication complexity, scheduling theory, optimization, dynamical systems, etc. Semiring arithmetics allows to reduce non-linear problems to the linear problems but over semirings. Tropical matrix invariants are useful in different problems of linear algebra and beyond. In the talk we will discuss the properties of the tropical analogs of rank, determinant, spectrum, and their applications. In particular, some of our recent joint results with Marianne Akian, LeRoy Beasley, Stephane Gaubert, and Yaroslav Shitov related to matrix rank functions and their interrelations, will be presented.