

SEMINARIO

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A characteristic free approach to finite determinacy

Abstract: Finite determinacy for mappings has been classically thoroughly studied in numerous scenarios in the real and complex-analytic category and in the differentiable case. It means that the map-germ is determined, up to a given equivalence relation, by a finite part of its Taylor expansion. The equivalence relation is usually given by a group action and the first step is always to reduce the determinacy question to an “infinitesimal determinacy”, i.e. to the tangent spaces at the orbits of the group action.

The goal of this talk is to formulate a universal approach to finite determinacy in arbitrary characteristic, not necessarily over a field, for a large class of group actions; along the way, we introduce the notion of “pairs of (weak) Lie type”, which are groups together with a substitute for the tangent space at the unit element, such that the group is locally approximated by its tangent space, in a precise sense. This construction may be regarded as a sort of replacement of the exponential/logarithmic maps and is of independent interest. In this generality we establish the “determinacy versus infinitesimal determinacy” criteria, a far reaching generalization of numerous classical and recent results, together with some new applications.

The content of this talk is based on joint work in progress with Gert-Martin Greuel (Universität Kaiserslautern, Germany) and Dmitry Kerner (Ben-Gurion University of the Negev, Israel)

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