SEMINARIO

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SIM126: Interpolation of derivatives and ultradifferentiable regularity

Abstract: Interpolation results are classical problems in Mathematics. In this talk we are concerned with the following basic question: When given an infinitely differentiable function let us assume that some derivatives admit a precise growth control; i.e. information is available on a prescribed subsequence of all integers. Can then this lacunary information be extended to all derivatives? We are interested in this problem within the so-called ultradifferentiable setting; i.e. when the given derivatives are bounded by a fixed weight sequence, weight function, or even weight matrix. In order to proceed it is natural to study and understand the interplay of the weights and the lacunary sequence on which information is available and, finally, to involve suitable interpolation inequalities. The most prominent example is the classical “Gorny-Cartan-inequality”. We treat this problem by reviewing some more interpolation inequalities for derivatives and work within the general weight matrix setting to obtain results for weight sequences and functions automatically. We also deal with some nonstandard cases; e.g. Gelfand-Shilov-type classes.
This is joint work with Armin Rainer (University of Vienna).

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