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Lecture 1: A survey on the Bernstein Markov Property I

Joint work with Thomas Bloom, Norman Levenberg and Franck Wielonsky.

We give an introduction on the Bernstein Markov Property in the complex plane. Such a property is an asymptotic assumption on the growth rate of uniform norms of polynomials on a compact set K with respect to their $L^2_\mu(K)$ norms as the degree tends to ∞, here μ is any positive finite Borel measure.

We provide some examples and a sufficient condition for a measure to satisfy such a property on its support.

Also, we illustrate the connection of the Bernstein Markov Property with Logarithmic Potential Theory and its application to Approximation Theory.

[Time permitting:] we will mention some variants of the Bernstein Markov Property (e.g. for rational functions, weighted polynomials, Muntz polynomials and Riesz potentials).

Lecture 2: A survey on the Bernstein Markov Property II

After a quick recall on some basic notions in Pluripotential Theory, we will show that the most of the results regarding the Bernstein Markov Property in $\mathbb{C}$ have their $\mathbb{C}^n$ counterparts, provided a suitable "translation" is performed.

In particular we will sketch the proof of the best known sufficient condition for a measure to satisfy the Bernstein Markov Property on its support in $\mathbb{C}^n$.

Finally, we introduce a new result. We consider the case of a measure whose support is a compact subset of a irreducible algebraic variety of $\mathbb{C}^n$ and give a new mass density sufficient condition for the Bernstein Markov Property in this setting.

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