



Analysis Seminar

Title: A New Link Between Convexity and Double-Layer Potentials

Speaker: Javad Mashreghi (Laval University)

Date: Tue 11th November 2025 at 3:00PM

Location: E0.32 (beside Pi restaurant)

Abstract: Let Ω be a simply connected domain in the complex plane, and let $\phi : \mathbb{D} \rightarrow \Omega$ be a conformal mapping from the open unit disk $\mathbb{D}$ onto Ω . It is well known that Ω is convex if and only if

$$\Re \left(\frac{z\phi''(z)}{\phi'(z)} \right) \geq -1, \quad z \in \mathbb{D}.$$

We show that this relation is, in fact, inherited by a single Blaschke factor, and that when considering the family of all finite Blaschke products, entirely new intrinsic properties of ϕ are revealed.

This is an ongoing research with T. Ransford, Oliver Roth and Annika Moucha.

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