



Analysis Seminar

Title: Models and pre-models for holomorphic self-maps of the unit disk

Speaker: Maria Kourou (University of Würzburg)

Date: Tue 17th February 2026 at 3:00PM

Location: E0.32 (beside Pi restaurant)

Abstract: Let φ be a holomorphic self-map of the unit disk \mathbb{D} , having no interior fixed points. In the talk, we explore various aspects of both forward and backward dynamics of φ . Under appropriate normalizations, there exists a unique triple $(\Omega_0, \sigma, z \mapsto z+1)$, where Ω_0 is a domain in \mathbb{C} and $\sigma : \mathbb{D} \rightarrow \Omega_0$ is a holomorphic function, which is said to be a model for φ . The function σ is called the Koenigs function of φ . We discuss latest advances on the boundary behavior of the Koenigs function σ for all possible cases of the holomorphic map φ . Concentrating on the backward dynamics of φ , suppose that $\xi \in \partial\mathbb{D}$ is a repulsive fixed point of φ . Then the function φ admits a triple (\mathbb{D}, g, η) at ξ , where η is a conformal automorphism of \mathbb{D} and g is a holomorphic self-map of \mathbb{D} , which is called a pre-model for φ at ξ . In this context, we study necessary and sufficient conditions so that the pre-model at ξ is regular.

The results presented are based on joint works with M. Contreras, F. Cruz-Zamorano, L. Rodríguez-Piazza, and P. Gumenyuk, A. Moucha, O. Roth.

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