Eva Gallardo-Gutierrez, (Spain)

Composition operators on Hardy spaces of a simply connected domain

Joint work with Maria J. González and Artur Nicolau

For any simply connected domain Ω, we prove that a Littlewood type inequality satisfied by the symbol φ is necessary for boundedness of the composition operator C_φ on the Hardy spaces $H^p(\Omega)$, $1 \leq p < \infty$, whenever the symbol φ is finitely-valent. Of course, the corresponding "little-oh" condition held by φ is also necessary for the compactness of C_φ. Nevertheless, it is shown that such inequality is not sufficient for characterizing bounded composition operators even induced by univalent symbols. Furthermore, such inequality is no longer necessary if we drop the extra assumption on the symbol of being finitely-valent. In particular, this solves a question posed by Shapiro and Smith and shows a striking link between the geometry of the underlying domain and the symbol inducing the composition operator in $H^p(\Omega)$, $1 \leq p < \infty$.

Eva Gallardo-Gutierrez, (USA)

Hausdorff Measures, Capacities and Compact Composition Operators

Joint work with Maria J. González

It is shown that there exist analytic self-maps φ of the unit disc $\mathbb{D}$ inducing compact composition operators on the Hardy space $\mathcal{H}^p$, $1 \leq p < \infty$ such that the Hausdorff dimension of the set $E_\varphi = \{e^{i\theta} \in \partial\mathbb{D} : |\varphi(e^{i\theta})| = 1\}$ is one; sharpening a classical result due to Schwartz. Moreover, the same holds in certain weighted Dirichlet spaces.