Completeness of frequencies for semigroups of composition operators

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Abstract: Given a (continuous) semigroup of non-elliptic holomorphic self-maps of the unit disc, one can associate a semigroup of composition operators. The eigeinfunctions of the corresponding infinitesimal generator are given by e^{tz} , where t is a complex number and z varies on the Koenigs domain of the semigroup. The set of frequencies is complete in a function space provided its span is dense. The aim of this talk is to provide a full characterization of complete frequencies in H^{∞} with respect to the weak-star topology in terms of the analytic and dynamical properties of the original semigroup of holomorphic self-maps. This characterization needs some particular study of boundary discontinuities of the semigroup. I will also give sufficient conditions for completeness in H^p and some open questions.

The talk is based on a joint work with Eva Gallardo-Gutiérrez (Univ. Complutense de Madrid – ICMAT) and Dmitry Yakubovich (Univ. Autónoma de Madrid).