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**Holomorphic semigroups and Sarason's characterization of vanishing mean oscillation.**

**Abstract**

It is a classical theorem of Sarason that an analytic function of bounded mean oscillation (BMOA), is of vanishing mean oscillation if and only if its rotations converge in norm to the original function as the angle of the rotation tends to zero. In a series of two papers Blasco et al. have raised the problem of characterizing all semigroups of holomorphic functions that can replace the semigroup of rotations in Sarason's Theorem. In this talk we will give a complete answer to this question, in terms of a logarithmic vanishing oscillation condition on the infinitesimal generator of the semigroup. In particular we confirm the conjecture of Blasco et al. that all such semigroups are elliptic. We also investigate the analogous question for the Bloch and the little Bloch space and surprisingly enough we find that the semigroups for which the Bloch version of Sarason's Theorem holds are exactly the same as in the BMOA case. This is a joint work with Vassilis Daskalogiannis.