



6th Symposium on Analysis and PDEs

Purdue University, June 1–4, 2015

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June 3, 11:30–11:55am

A Free Boundary Problem for the Parabolic Poisson Kernel.

We study parabolic chord arc domains, introduced by Hofmann, Lewis and Nyström (*Duke*, '04), and prove a free boundary regularity result below the continuous threshold. More precisely, we show that a Reifenberg flat, parabolic chord arc domain whose Poisson kernel has logarithm in VMO must in fact be a vanishing chord arc domain (i.e. satisfies a vanishing Carleson measure condition). This generalizes, to the parabolic setting, a result of Kenig and Toro (*Ann. ENS*, '03) and answers in the affirmative a question left open in the aforementioned paper of Hofmann et al.