Brennan's conjecture holds for semigroups of holomorphic functions

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Abstract

J. E. Brennan in 1978 conjectured that if $f : \mathbb{D} \mapsto \mathbb{C}$ is a conformal map, then the $p-$integral means of the derivative are finite, whenever $p \in (2, \frac{2}{3})$. That is:

$$\int_{\mathbb{D}} |f'(w)|^p \, dA(w) < \infty.$$

Brennan's conjecture is one of the most famous remaining open problems in the field of geometric function theory. It is known that the conjecture holds for the values $p \in (1.76, \frac{2}{3})$. The aim of this talk is to give a short proof of Brennan's conjecture in the special case where f can be embedded into a semigroups of holomorphic functions in the unit disk.