

Approximating the modulus of an inner function

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Abstract

In 1981 Peter Jones asked if inner functions can be uniformly approximated by interpolating Blaschke products. The problem is still open. We will show that the question has a positive answer if we restrict attention to the modulus. That is, given an inner function f and $\epsilon > 0$, there is an interpolating Blaschke product B such that $||f(z)| - |B(z)|| < \epsilon$ for all z in the unit disk. The proof is based on the Corona construction by Lennart Carleson.