

TEMPLE UNIVERSITY

Department of Mathematics

Analysis Seminar

Zoom meeting

Monday October 12, 2020, 2:40 p.m.

*On a conjecture of Baouendi and Rothschild
regarding unique continuation*

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Abstract: In 1993, Baouendi and Rothschild proved the following boundary unique continuation result: Let B^+ be a half ball in the upper half space in \mathbb{R}^n , u continuous on $\overline{B^+}$, harmonic in B^+ , and $u(x', 0) \geq 0$ on the flat piece of ∂B^+ . If u vanishes to infinite order at the origin in the sense that $u(x) = O(|x|^N)$ for all N , then $u \equiv 0$.

They conjectured that a similar result holds for more general domains and more general second order elliptic operators. We will present a positive solution of the conjecture for second order elliptic operators with real analytic coefficients with data given on a real analytic hypersurface. Our result will be a special case of a more general theorem for real analytic elliptic differential operators of any order. Our results have applications to unique continuation for CR functions which was the original inspiration for Baouendi and Rothschild.