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Max D. Engelstein* (maxe@math.uchicago.edu). *The structure of the singular set of a two-phase free boundary problem for harmonic measure.*

We study the stratification, structure and dimension of the singular set of a two-phase free boundary problem for harmonic measure. With weak regularity assumptions on the free boundary condition, the traditional tools used to study singular sets (e.g. monotonicity formulas, uniqueness of blowups) are unavailable. Instead, we must study the (pseudo)-tangent sets using techniques from geometric measure theory. When more regularity is assumed on the free boundary condition, a mix of the aforementioned GMT and traditional techniques allows us to establish even greater structure.

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