Measure Doubling for Small Sets in $\mathrm{SO}(3, \mathbb{R})$

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This is joint work with Chieu-Minh Tran and Ruixiang Zhang.

Let $\mathrm{SO}(3, \mathbb{R})$ be the 3D-rotation group equipped with the real-manifold topology and the normalized Haar measure μ. Confirming a conjecture by Breuillard and Green, we show that if A is an open subset of $\mathrm{SO}(3, \mathbb{R})$ with sufficiently small measure, then $\mu(A^2)$ is greater than $3.99\mu(A)$.