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Eric Weber*, Department of Mathematics, 411 Morrill Rd, Iowa State University, Ames, IA 50011. *Stability of Fourier Series Expansions for Singular Measures.*

For a singular measure μ on the unit interval $[0, 1]$, every square-integrable function $f \in L^2(\mu)$ possesses a Fourier series expansion. This result was originally proven by Poltoratski, but in work with John Herr, we reproved this result using the Kaczmarz reconstruction algorithm.

Unlike the classical Lebesgue case, these Fourier series expansions converge conditionally, and are therefore unstable in the presence of noise. We demonstrate several methods for stabilizing these reconstructions, including via Abel summation. Moreover, we demonstrate that the modified and stabilized reconstruction can be described in terms of an augmented Kaczmarz algorithm.

This is joint work with Caleb Camrud, Evan Camrud, and Lee Przybylski. (Received August 13, 2018)