1147-42-264   **John E. Herr*** (`jeherr@butler.edu`), **Eric S. Weber** (`esweber@iastate.edu`) and **Palle E. T. Jorgensen** (`palle-jorgensen@uiowa.edu`). *Fourier Analysis on One-Dimensional Singular Fractal Measures.*

A celebrated result of Jorgensen and Pedersen shows that the L^2 space of the quaternary Cantor measure μ_4 has an orthogonal basis of complex exponential functions, while the classical ternary Cantor measure μ_3 does not. The former result relies on the existence of a Hadamard triple relative to the iterated function system that generates μ_4. We use the Kaczmarz algorithm to construct Fourier series expansions for functions that are square-integrable with respect to a singular fractal measure on the unit interval, or indeed any singular measure. From these expansions, we construct reproducing kernel Hilbert subspaces of the Hardy space wherein the the inner product is that of integration of boundary functions with respect to a singular fractal measure. We also demonstrate a condition on the size of an iterated function system that makes it not admissive of Hadamard triples. (Received January 15, 2019)