1154-42-154 **Palle Jorgensen***, palle-jorgensene@uiowa.edu, Harvard Univ, Boston, and **Steen Pedersen**.

Orthogonal Fourier expansions for certain fractals.

Starting with classical Fourier analysis, the talk focuses on classes of fractals, and a wider view of their harmonic analysis. We review a construction by the author and Pedersen of explicit orthogonal Fourier expansions for certain affine fractals. It has since branched off several new directions, each one dealing with aspect of the wider subject. The results presented will cover (among others) joint work with Steen Pedersen, then later, with Dorin Dutkay. Intuitively, it is surprising that any selfsimilar fractals at all, in fact, do admit orthogonal Fourier series. The general theme of Fourier series, and harmonic analysis, on Fractals has by now taken off in a number of diverse directions; e.g., (i) wavelets on fractals, or frames; (ii) non-commutative analysis on graph limits, (iii) discrete approximations; to mention only three. Two popular question are: "What kind of fractals admit Fourier series?" "If they don't, then what alternative harmonic analysis might be feasible?" (Received August 16, 2019)