

1163-43-125

Lillian B Pierce* (pierce@math.duke.edu). *On superorthogonality.*

We will survey how superorthogonality in a sequence of functions results in direct or converse inequalities for an associated square function. We distinguish between three main types of superorthogonality, which we demonstrate arise in a wide array of settings in harmonic analysis and number theory. This perspective gives clean proofs of central results, and unifies topics including Khintchine's inequality, Walsh-Paley series, discrete operators, decoupling, counting solutions to systems of Diophantine equations, multicorrelation of trace functions, and the Burgess bound for short character sums. (Received August 18, 2020)