

1155-60-12

Christopher Corley* (christopher-corley@utc.edu), 415 EMCS Building (Dept. 6956), 615 McCallie Avenue, Chattanooga, TN 37403, and **Andrew Ledoan** (andrew-ledoan@utc.edu), 415 EMCS Building (Dept. 6956), 615 McCallie Avenue, Chattanooga, TN 37403. *The density of complex zeros of random sums*. Preliminary report.

Let $\{\eta_j\}_{j=0}^N$ be a sequence of independent, identically distributed random complex Gaussian variables, and let $\{f_j\}_{j=0}^N$ be a sequence of given analytic functions that are real-valued on the real number line. In this talk, I will present an exact formula for the expected density of the distribution of complex zeros of the equation $\sum_{j=0}^N \eta_j f_j(z) = \mathbf{K}$, where $\mathbf{K} \in \mathbb{C}$. The method of proof employs a formula for the expected absolute value of quadratic forms of Gaussian random variables. In addition, I will discuss the limiting behavior of the density function as N tends to infinity and the numerical computations for the density function and empirical distributions for certain functions f_j , such as polynomials orthogonal on the real line and the unit circle. (Received September 24, 2019)