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*Structure theorem for multiplicative functions of Gaussian integers and its applications.*

In this talk, we present a structure theorem for multiplicative functions of Gaussian integers. Roughly speaking, we show that every multiplicative function of Gaussian integers can be written as the sum of an "almost periodic" function, a function with small Gowers norm, and an error term. We will also explain its connection with ergodic theory and give a combinatorial application of it. (Received August 18, 2015)