On the infinite divisibility and non infinite divisibility of certain classes of random variables

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Abstract

In this dissertation we present new results on the classification of limit distributions of random geometric processes. In particular, the results develop on the work of Penrose and Wade and Vervaat who documented the phenomenon of infinite divisibility in the case of a particular (uniform) distribution. In this dissertation we put forth not only new results, but a new method of obtaining results through analyzing the sequence of moments produced by random variables. Additionally, we have new results in cycle decomposition of the related Dickman-Goncharov distribution. We present a novel proof of the distribution of the three highest order cycles in a random partition.

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