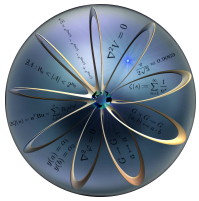

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infinitely divisible random variable

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Classification	msc 60E07
Defines	n-decomposable
Defines	n-divisible
Defines	infinitely divisible distribution
Defines	infinitely divisible
Defines	decomposable random variable

Let n be a positive integer. A real random variable X defined on a probability space $(\Omega, \mathcal{F}, P)$ is said to be

1. *n-decomposable* if there exist n independent random variables $X_1, \ldots, X_n$ such that X is identically distributed as the sum $X_1 + \cdots + X_n$. A 2-decomposable random variable is also called a *decomposable random variable*;

2. *n-divisible* if X is n-decomposable and the X_i's can be chosen so that they are identically distributed;

3. *infinitely divisible* if X is n-divisible for every positive integer n. In other words, X can be written as the sum of n iid random variables for any n.

A distribution function is said to be *infinitely divisible* if it is the distribution function of an infinitely divisible random variable.

Remark. Any stable random variable is infinitely divisible.

Some examples of infinitely divisible distribution functions, besides those that are stable, are the gamma distributions, negative binomial distributions, and compound Poisson distributions.