# On asymptotic scales of independently stopped random sums

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We study properties of randomly stopped sums using asymptotic scales. The use of scales enables the study similar to the study of finiteness of moments among all heavy-tailed random variables. We investigate how the tail of the stopped random walk

$$S_N = \sum_{i=1}^{N} X_i$$

is affected by the tails of its increments $X_i$, $i \in \{1, 2, 3, \ldots\}$, and the stopping variable $N$. The stopping is assumed to be independent of the sequence $(X_i)$.

Specifically, we want discover situations where one of the model's parts dominates the entire asymptotic behaviour. Identifying the dominant variable of the stopped sum has applications in e.g. insurance, where the compounded variable $S_N$ is used to model the aggregate loss of a company. In this setting, the aim is to find out if large losses are mainly caused by few big increments or unusually large amounts of small increments.