

# Self-Standardized Central Limit Theorems for Trimmed Subordinators

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## ABSTRACT

We prove under general conditions that a trimmed subordinator satisfies a self-standardized central limit theorem [CLT]. Our basic tools are a classic representation for subordinators (e.g. Rosiński (2001)) and a powerful distributional approximation result of Zaitsev (1987). Among other results, we obtain as special cases of our main result the recent self-standardized CLTs of Ipsen, Maller and Resnick (2019) for trimmed subordinators and a trimmed subordinator analog of a CLT of S. Csörgő, Horváth and Mason (1986) for intermediate trimmed sums in the domain of attraction of a stable law. We then discuss how our methods extend to proving similar theorems for spectrally positive Lévy processes and then to general Lévy processes.