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ON MIXTURES OF GAMMA DISTRIBUTIONS, DISTRIBUTIONS WITH HYPERBOLICALLY MONOTONE DENSITIES AND GENERALIZED GAMMA CONVOLUTIONS (GGC)

BY

TORD SJÖDIN (UMEÅ)

Abstract. Let Y be a standard $\mathrm{Gamma}(k)$ distributed random variable (rv), $k > 0$, and let X be an independent positive rv. If X has a hyperbolically monotone density of order k (HM_k), then $Y \cdot X$ and Y/X are generalized gamma convolutions (GGC). This extends work by Roynette et al. and Behme and Bondesson. The same conclusion holds with Y replaced by a finite sum of independent gamma variables with sum of shape parameters at most k. Both results are applied to subclasses of GGC.

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