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

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Abstract. Let $Y$ be a standard 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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