On univariate slash distributions, continuous and discrete

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Abstract

In this article, I explore in a unified manner the structure of uniform slash and α-slash distributions which, in the continuous case, are defined to be the distributions of Y / U and $Y_\alpha / U^{1/\alpha}$ where Y and Y_α follow any distribution on $\mathbb{R}^+$ and, independently, U is uniform on $(0, 1)$. The parallels with the monotone and α-monotone distributions of $Y \times U$ and $Y_\alpha \times U^{1/\alpha}$, respectively, are striking. I also introduce discrete uniform slash and α-slash distributions which arise from a notion of negative binomial thinning/fattening. Their specification, although apparently rather different from the continuous case, seems to be a good one because of the close way in which their properties mimic those of the continuous case.

Keywords Binomial thinning · Monotone density · Negative binomial fattening · Uniform random variable

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