POISSON APPROXIMATION TO THE CONVOLUTION OF POWER SERIES DISTRIBUTIONS

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Abstract. In this article, we obtain, for the total variation distance, error bounds for Poisson approximation to the convolution of power series distributions via Stein's method. This provides a unified approach to many known discrete distributions. Several Poisson limit theorems follow as corollaries from our bounds. As applications, we compare Poisson approximation results with negative binomial approximation results for sums of Bernoulli, geometric, and logarithmic series random variables.

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Key words and phrases: convolution of distributions, Poisson and negative binomial approximation, power series distribution, Stein's method.

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