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An Error Term in the Central Limit Theorem for Sums of Discrete Random Variables

We consider sums of independent identically distributed random variables whose distributions have $d + 1$, ($d \geq 2$) atoms. Such distributions never admit an Edgeworth expansion of order d but we show that for almost all parameters the Edgeworth expansion of order $d - 1$ is valid and the error of the order d Edgeworth expansion is typically of order $n^{-d/2}$. This is a joint work with Dmitry Dolgopyat.