

An extension of my inequality

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Let n be an arbitrary positive integer, Y be a Gaussian variable with expected value zero and variance n . The quantile transformation offers a function Q such that $X = Q(Y)$ has the same distribution as the sum of n iid ± 1 variables with zero expected value. My inequality states that

$$|X - Y| \leq Y_0^2 + 1,$$

where $Y_0 = Y/\sqrt{n}$. The function Q is a step function, the extension of the inequality states that all the steps of Q cross the identity function. The statement was jointly proved by Peter Harremoës, László Györfy and me in 2012. Later this fact was broadly extended by Peter Harremoës to a so called signed likelihood.