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A note on Hammersley's inequality for estimating the normal integer mean. (English)

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Int. J. Math. Math. Sci. 2003, No. 34, 2147-2156 (2003).

Summary: Let $X_1, X_2, \ldots, X_n$ be a random sample from a normal $N(\theta, \sigma^2)$ distribution with an unknown mean $\theta = 0, \pm 1, \pm 2, \ldots$. *J. M. Hammersley* [J. R. Stat. Soc., Ser. B 12, 192-240 (1950; Zbl 0040.22202)] proposed the maximum likelihood estimator (MLE) $d = [\overline{X}_n]$, nearest integer to the sample mean, as an unbiased estimator of θ and extended the Cramér-Rao inequality. The Hammersley lower bound for the variance of any unbiased estimator of θ is significantly improved, and the asymptotic (as $n \to \infty$) limit of Fraser-Guttman-Bhattacharyya bounds is also determined. A limiting property of a suitable distance is used to give some plausible explanations why such bounds cannot be attained. An almost uniformly minimum variance unbiased (UMVU) like property of d is exhibited.

MSC:

62F10 Point estimation
62F12 Asymptotic properties of parametric estimators

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