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ON TWO NECESSARY σ-FIELDS AND ON UNIVERSAL LOSS FUNCTIONS

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Abstract: It is shown that the class of best unbiased estimators can be characterized by two necessary σ-fields $\mathcal{S}$ and $\mathcal{U}$. The "large" σ-field $\mathcal{S}$ is a makeshift of the minimal sufficient σ-field whereas the "small" σ-field $\mathcal{U}$ is a makeshift of the maximal complete σ-field. Each estimator which is best unbiased for a strictly convex loss function is $\mathcal{S}$-measurable. Every $\mathcal{U}$-measurable estimator is best unbiased for arbitrary convex loss. Relations of properties of $\mathcal{S}$ and $\mathcal{U}$ with the structure of the class of best unbiased estimators and with properties of universal loss functions are investigated.

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