

Construction of Confidence Regions without Pivotal Quantity

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Abstract: It is often difficult to find a pivotal quantity, especially in situations with discrete or censored samples. In this paper, a novel method is proposed for the construction of exact confidence regions without the help of a pivotal quantity. The construction method is universal, flexible and convenient, so that exact confidence regions can be built for any kind of model and data. This method is the natural expansion from confidence limit to general regions for the method of Buehler(1957) which is specially designed for lower and upper confidence limits. Also, it can be viewed as the expansion of the method of Sterne(1954) by inverting an exact test for binomial parameter. The method is illustrated by some parameter models.

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