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正态分布百分位值和百分率的置信限和容忍限公式

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FORMULAS FOR TOLERANCE LIMITS AND CONFIDENCE LIMITS OF NORMAL POPULATION PERCENTILES AND PERCENTAGES

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摘要

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摘要 建立了正态分布置信限曲线方程,给出了其百分位值和百分率的置信限公式和容忍限公式。该公式对完全数据、不完全数据和无失效数据均适用,并且可综合利用当前数据和经验数据。

关键词: 正态密度函数 置信限 可靠性分析

Abstract: The equations for confidence limit curves of a normal distribution are established. The formulas for confidence limits of percentiles and percentages and tolerance limits of a normal distribution are given by means of the noncentral t-distribution. The one-sided confidence limits and two-sided confidence intervals of percentiles and percentages can be obtained, and the one-sided tolerance limits and two-sided tolerance intervals of a normal distribution may be calculated by these formulas. They are applicable to the complete, the incomplete and the zero-failure data. A method of combining sample means or sample variances is also presented to make full use of previous data and reduce the number of specimens. The formulas are simple and convenient for application in engineering.

Keywords: normal density functions confidence limits reliability analysis

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