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A NEW METHOD FOR CONSTRUCTING CONFIDENCE INTERVALS FOR THE INDEX C_{pm}

Michael Perakis* and Evdokia Xekalaki*

***Abstract*– In the statistical literature on the study of the capability of processes through the use of indices, C_{pm} introduced by Chan et al. [2] appears to have been one of the most widely used capability indices and its estimation has attracted much interest. In this article, a new method for constructing approximate confidence intervals for this index is suggested. The method is based on an approximation of the noncentral chi-square distribution, which was proposed by Pearson [11]. Its coverage appears to be more satisfactory compared to that achieved by any of the two most widely used methods that were proposed by Boyles [1]. This is supported by the results of an extensive simulation study.**

***Index terms*– process capability indices, noncentral chi-square distribution, approximate confidence intervals.**