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ONLINE ISSN : 1348-6365

PRINT ISSN : 1882-2754

**JOURNAL OF THE JAPAN STATISTICAL SOCIETY**

Vol. 32 (2002) , No. 1 pp.1-14

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## ON BAYESIAN ANALYSIS OF BINOMIAL RELIABILITY GROWTH

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**Abstract:** This paper introduces a new class of prior distributions for reliability growth tests with binomial data under the monotone model. The proposed prior has a conditional form, which accords well with various actual situations in reliability growth tests. The expressions of the corresponding means and variances for all stages with and without conditioning are obtained, and the relationship between the shape of the prior distributions and their parameters are discussed. These results are helpful in order to incorporate expert opinions. The posterior density and the Bayesian lower bound of the reliability at the end of the test, and a computation method for them are given. The new family of prior distributions includes the uniform prior used by Smith (1977) and the ordered Dirichlet priors presented by Mazzuchi and Soyer (1992, 1993) as special cases. Comparisons are made by two examples, which show the limitations of the later two.

**Key words:** Attribute reliability growth, monotone model, prior distributions, posterior density, Bayesian lower bound

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