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PARAMETER ESTIMATION OF NAKAGAMI DISTRIBUTION UNDER PRECAUTIONARY LOSS FUNCTION

Arun Kumar Rao and Himanshu Pandey

Department of Mathematics and Statistics,
DDU Gorakhpur University,
Gorakhpur - 273009, Uttar Pradesh, INDIA

E-mail : himanshu_pandey62@yahoo.com

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Abstract: In this paper Bayes estimators of the scale parameter of Nakagami distribution have been obtained by taking quasi, inverted gamma and uniform prior distribution using the precautionary loss function. These are compared with the corresponding estimators with squared loss function.

Keywords and Phrases: Nakagami Distribution, Bayesian method,Inverted Gamma, Precautionary Loss Function.

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1. Introduction

Nakagami distribution can be considered as a flexible lifetime distribution [1]. It is also widely considered in biomedical fields. Shanker et al. [2] and Tsui et al. [3] use the Nakagami distribution to model ultrasound data in medical imaging studies. This distribution is extensively used in reliability theory and reliability engineering and to model the constant hazard rate portion because of its memory less property.

The probability density function of the Nakagami distribution [4] is given by

$$f(x;\theta,k) = \frac{2k^k}{\Gamma(k)\theta^k} x^{2k-1} e^{-\frac{k}{\theta}x^2} \quad ; \quad x>0,\ k>0,\ \theta>0. \tag{1}$$