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APPLICATIONS OF THE GEGENBAUER DISTRIBUTION TO BALL GAMES

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The Gegenbauer distribution, which is derived as a gamma-mixed Hermite distribution is a very wider class of discrete distribution. Here, we have made an attempt to review the work done earlier and have discussed some of its important properties like recurrence relations of probabilities, moments, etc. It has been observed from the literature that the distributions of the scores of teams and individuals in several sports involving ball games produce close fit to the negative binomial distribution. In this paper, it is assumed that elementary distributions such as the negative binomial, Poisson and Hermite distributions, which can be formulated on the basis of simple models, may be inadequate to describe the situations which may occur in a number of phenomena. Hence it will be reasonable to suppose that the Gegenbauer distribution may provide better fit than the negative-binomial, Poisson, Hermite etc. as the later distributions will be obtained as a particular cases of the former. Some adhoc methods have been considered for the estimation of the parameters in the fitting of the distributions of the scores and individuals for several sports involving ball games and in most of the cases, Gegenbauer distribution gives better fit.

Key Words: Gegenbauer Distribution, Polynomial, Recurrence Relation, Ball games, Estimation, Goodness of fit.

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