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THE MULTIVARIATE GENERALIZED WARING DISTRIBUTION

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ABSTRACT

A multivariate extension of the generalized Waring distribution is defined through a multivariate generalization of Waring's expansion and its properties are studied. It is proved that the marginal distributions (conditional or unconditional) and their convolution are generalized Waring distributions. The multivariate generalized Waring distribution is then shown to arise in accident theory as the joint distribution of accidents incurred by an accident prone population exposed to variable external accident risk over a series of non-overlapping time periods. It is further demonstrated that using this multivariate distribution one can "measure" the contributions of accident proneness, accident risk exposure and chance to a given accident situation.