

ON VOLTERRA AND ORTHOGONALITY PRESERVING QUADRATIC STOCHASTIC OPERATORS

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Abstract

A quadratic stochastic operator (in short QSO) is usually used to present the time evolution of differing species in biology. Some quadratic stochastic operators have been studied by Lotka and Volterra. In the present paper, we first give a simple characterization of Volterra QSO in terms of absolutely continuity of discrete measures. Moreover, we provide its generalization in continuous setting. Further, we introduce a notion of orthogonal preserving QSO, and describe such kind of operators defined on two dimensional simplex. It turns out that orthogonal preserving QSOs are permutations of Volterra QSO. The associativity of genetic algebras generated by orthogonal preserving QSO is studied too.

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