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On Non-ergodic Volterra Cubic Stochastic Operators (Article)

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Abstract

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Let S^{m-1} be the simplex in R^m , and $V: S^{m-1} \rightarrow S^{m-1}$ be a nonlinear mapping then this operator satisfies an ergodic theorem if the limit $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n V^k(x)$ exists for every $x \in S^{m-1}$. It is a well known fact that this ergodicity may fail for Volterra quadratic operators, so it is natural to characterize all non-ergodic operators. However, there is an ongoing problem even in the low dimensional simplexes. In this paper, we solve the mentioned problem within Volterra cubic stochastic operators acting on two-dimensional simplex. © 2019, Springer Nature Switzerland AG.

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