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Mukhamedov, F.[a] , Hee, P.C.[b] , Rosli, A.[b]

A class of bijective Lotka–Volterra operators and its application
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[a] Department of Mathematical Sciences, College of Science, United Arab Emirates University, Abu Dhabi, Al Ain, United Arab Emirates
[b] Department of Computational and Theoretical Sciences, Faculty of Science, IIUM, Pahang, Kuantan, Malaysia

Abstract
It is well known that any classical Lotka–Volterra (LV) operator (associated with quadratic stochastic operator) defined on the simplex is a homeomorphism. On the other hand, more general LV systems have important applications in the time evolution of conflicting species in biology. It is natural to study the bijectivity of such kind of LV operators. There is an example of a LV operator which is not injective. In this paper, we introduce a class of LV operators that are bijective. As an application of our result, the existence and uniqueness of solution of a class of Hammerstein integral equations is proved. © 2023 John Wiley & Sons, Ltd.

Author Keywords
bijective; integral equation; Lotka–Volterra operator; stochastic

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Stochastic systems; Bijective, Bijectivity, Existence and uniqueness of solution, ITS applications, Lotka-Volterra, Lotka-Volterra systems, Lotkum–volterrum operator, Stochastics, Time evolutions, Volterra operators; Integral equations

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Correspondence Address
Mukhamedov F.; Department of Mathematical Sciences, P.O. Box 15551, United Arab Emirates; email: farrukh.m@uaeu.ac.ae

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