Volume 4 Number 4 December 2022 ISSN 2562-2854 (print) ISSN 2562-2862 (online)

Journal of Nonlinear Modeling and Analysis

Editors-in-Chief Maoan Han & Junling Ma



Pacific Edilite Academic Inc.



Zhejiang Normal University

## Journal of Nonlinear Modeling and Analysis

Volume 4, Number 4

December 2022

## Contents

615 Rational Solutions to the KdV Equation in Terms of Particular Polynomials

Pierre Gaillard

- 628 The Exact Solutions for the Benjamin-Bona-Mahony Equation Xiaofang Duan, Junliang Lu, Yaping Ren and Rui Ma
- 650 Existence and Uniqueness Theorems for a Three-step Newtontype Method under *L*-Average Conditions Jai Prakash Jaiswa
- 658 Positive Solutions of Second-order Difference Equation with Variable Coefficient on the Infinite Interval Yanqiong Lu and Rui Wang
- 677 Dynamic Analysis of Stochastic Spruce Budworm Differential Model with Time Delay

Xueqing He, Ming Liu and Xiaofeng Xu

686 Triple Positive Solutions of Boundary Value Problems for Highorder Fractional Differential Equation at Resonance with Singularities

Zhiyuan Liu and Shurong Sun

701 Existence and Uniqueness of Solutions for the Initial Value Problem of Fractional  $q_k$ -Difference Equations for Impulsive with Varying Orders

Lulu Zhang, Fanjun Li and Zhenlai Han

722 Poincaré Bifurcation from an Elliptic Hamiltonian of Degree Four with Two-saddle Cycle

Yu'e Xiong, Wenyu Li and Qinlong Wang

- 736 Flocking of Multi-particle Swarm with Group Coupling Structure and Measurement Delay Maoli Chen and Yicheng Liu
- 753 Polynomial Homogeneous Maps and Their Periods Jaume Llibre and Violetta Pilyugina
- 764 Asymptotic Behavior of a Stochastic Predator-prey Model with Beddington-DeAngelis Functional Response and Lévy Jumps Yaru Guo and Shulin Sun
- 783 Existence of Nonoscillatory Solutions for a Rational Difference Equation of Higher Order Shaoxia Jin and Xianvi Li
- 791 On Time-space Fractional Reaction-diffusion Equations with Nonlocal Initial Conditions

Pengyu Chen and Peng Gao