Journal of



Mathematical Research with Applications

数学研究及应用

ISSN 2095-2651



Journal of Mathematical Research with Applications

Vol.43 No.2 (Sum No.199)

Contents

March 2023

Research Papers

On the normalized Laplacian spectra of some double join operations of graphs
Extremal (molecular) trees with respect to multiplicative Sombor indices
Optimal $L(2,1,1)$ -labelings of caterpillars
Bounds of the signed edge domination number of complete multipartite graphs Yancai ZHAO (161)
Permutation polynomials of $x^{1+\frac{q-1}{m}}+ax$
Rota-Baxter family systems and Gröbner-Shirshov bases Shuangjian GUO (175)
On Gorenstein homological dimensions of groups
A note on some inequalities of GG - E -convexity
A positive solution of mixed non-linear fractional delay differential equations with
integral boundary conditions Dayanand K. VYAVAHARE, Vinod V. KHARAT (213)
Two new mock theta double sums Jizhen YANG, Hanfei SONG, Zhizheng ZHANG (227)
Numerical range of the linear combination of Volterra operator and its adjoint
Jinxian WANG, Yuxia LIANG (234)
On skew polycyclic codes over $\mathbb{Z}_4[u]/\langle u^2-2\rangle$



Journal of Mathematical Research with Applications

Formerly Journal of Mathematical Research and Exposition Bimonthly Founded in 1981

Supervised by

The Ministry of Education of the People's Republic of China

Sponsored by

Dalian University of Technology &

China Society for Industrial and Applied Mathematics

Editors-in-Chief

Lei GUO & Renhong WANG

Edited & Published by

The Editorial Office of Journal of

Mathematical Research with Applications

Address: No.2 Linggong Road, Ganjingzi District

Dalian 116024, P. R. China

Printed by

Dalian Jinhuaguang Color Printing Co., Ltd.

Distributed

In China by Local Post Offices;

Overseas by China National Publications Import & Export (Group) Corporation