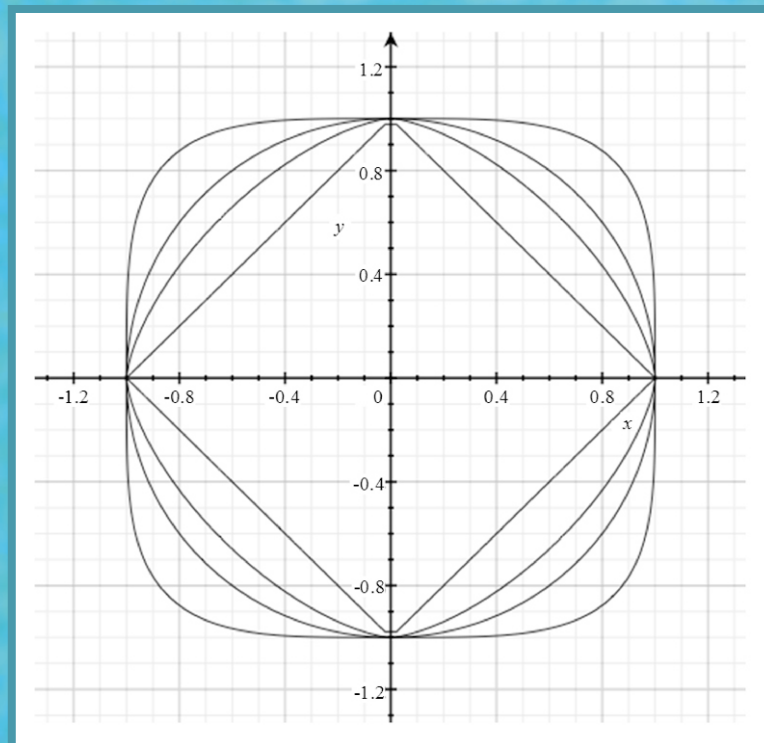




# Advances in Pure Mathematics



ISSN: 2160-0368



# Journal Editorial Board

ISSN 2160-0368 (Print) ISSN 2160-0384 (Online)

<http://www.scirp.org/journal/apm>

---

## Editor-in-Chief

**Prof. De-Xing Kong**

Zhejiang University, China

## Editorial Board

**Dr. Taher S. H. Abdelmonem**

Mansoura University, Egypt

**Dr. Adel Ahmed Attiya**

University of Mansoura, Egypt

**Prof. Kamal Bahmanpour**

Islamic Azad University-Ardabil Branch, Iran

**Prof. Józef Banaś**

Bronislaw Markiewicz State School of Higher

Vocational Education in Jaroslaw, Poland

**Prof. Constantin Buse**

West University of Timisoara, Romania

**Prof. Sumit Chandok**

Punjab Technical University, India

**Prof. Muhammad A. Chaudhry**

King Fahd University of Petroleum and Minerals, Saudi Arabia

**Prof. Pantelis A. Damianou**

University of Cyprus, Cyprus

**Prof. Dragan S. Djordjevic**

University of Nis, Serbia

**Prof. Ahmed M. A. El-Sayed**

Alexandria University, Egypt

**Prof. Marisa Fernandez**

Universidad del País Vasco, Spain

**Prof. Cristescu Gabriela**

Aurel Vlaicu University of Arad, Romania

**Prof. Hong-Ya Gao**

Hebei University, China

**Prof. Aleksander Grytczuk**

University of Zielona Góra and Jan Pawel II Western, Poland

**Prof. Yuxia Guo**

Tsinghua University, China

**Prof. Sevdzhan Hakkaev**

University of Kansas, Lawrence, USA

**Dr. Chengchun Hao**

Chinese Academy of Sciences, China

**Prof. Tian-Xiao He**

Illinois Wesleyan University, USA

**Prof. Wei He**

Nanjing Normal University, China

**Prof. Ting-Zhu Huang**

University of Electronic Science & Technology of China, China

**Prof. Shuichi Izumiya**

Hokkaido University, Japan

**Prof. Toshitake Kohno**

The University of Tokyo, Japan

**Prof. Vichian Laohakosol**

Kasetsart University, Thailand

**Dr. Jingjing Ma**

University of Houston-Clear Lake, USA

**Prof. Elimhan N. Mahmudov**

Istanbul Technical University, Turkey

**Prof. Ming Mei**

McGill University, Canada

**Prof. Rer. nat. Mara D. Neusel**

Texas Tech University, USA

**Dr. Marek Niezgodá**

University of Life Sciences in Lublin, Poland

**Dr. Jyotindra C. Prajapati**

Charotar University of Science and Technology, India

**Dr. Marius Rădulescu**

Institute of Mathematical Statistics and Applied Mathematics

“Gheorghe Mihoc-Caius Iacob” of the Romanian Academy, Bucharest, Romania

Zhengzhou University, China

**Prof. Jingli Ren**

Inonu University, Turkey

**Prof. Bayram Sahin**

Mansoura University, Egypt

**Dr. Samir H. Saker**

Tunis College of Sciences and Techniques, Tunisia

**Dr. Bessem Samet**

Tongji University, China

**Prof. Yongli Song**

I-Shou University, Chinese Taipei

**Prof. Yeong-Jeu Sun**

Universidad Politécnica de Valencia, Spain

**Dr. Néstor Thome**

Izmir University, Turkey

**Prof. Aydin Tiryaki**

Eötvös Loránd University, Hungary

**Prof. Gabor Toth**

Indian Institute of Technology, India

**Dr. Amitabha Tripathi**

Georgian Academy of Sciences, Mexico

**Prof. Nodari Vakhania**

University of Castilla-La Mancha, Spain

**Prof. Jose C. Valverde**

Harbin Institute of Technology, China

**Prof. Mingxin Wang**

Shanghai University, China

**Prof. Qing-Wen Wang**

Institute of Applied Physics and Computational Mathematics, China

**Dr. Yanjin Wang**

Canisius College, USA

**Prof. Anthony Ross Weston**

The University of Texas-Pan American, USA

**Dr. Jasang Yoon**

University of Toyama, Japan

**Prof. Norio Yoshida**

The Ohio State University, USA

**Prof. Mohamed F. Yousif**

Georgia Southern University, USA

**Dr. Shijun Zheng**

Huazhong Normal University, China

**Prof. Changjiang Zhu**

## TABLE OF CONTENTS

Volume 3    Number 6

September 2013

### Nemytskii Operator in the Space of Set-Valued Functions of Bounded $\varphi$ -Variation

W. Aziz.....563

### The Equivalence of Certain Norms on the Heisenberg Group

M. E. Egwe.....576

### A Construction That Produces Wallis-Type Formulas

J. M. Fitzhugh, D. L. Farnsworth.....579

### Estimates for Holomorphic Functions with Values in $\mathbb{C} \setminus \{0,1\}$

P. V. Dovbush.....586

### A Modified Wallman Method of Compactification

H. J. Wu, W.-H. Wu.....590

### Optimality of Distributed Control for $n \times n$ Hyperbolic Systems with an Infinite Number of Variables

A. H. Qamlo.....598

---

The figure on the front cover is from the article published in Advances in Pure Mathematics, 2013, Vol. 3, No. 6, pp. 579-585 by Joshua M. Fitzhugh and David L. Farnsworth.

# **Advances in Pure Mathematics (APM)**

## **Journal Information**

### **SUBSCRIPTIONS**

The *Advances in Pure Mathematics* (Online at Scientific Research Publishing, [www.SciRP.org](http://www.SciRP.org)) is published monthly by Scientific Research Publishing, Inc., USA.

#### **Subscription rates:**

Print: \$59 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### **SERVICES**

#### **Advertisements**

Advertisement Sales Department, E-mail: [service@scirp.org](mailto:service@scirp.org)

#### **Reprints (minimum quantity 100 copies)**

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### **COPYRIGHT**

Copyright©2013 Scientific Research Publishing, Inc.

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as described below, without the permission in writing of the Publisher.

Copying of articles is not permitted except for personal and internal use, to the extent permitted by national copyright law, or under the terms of a license issued by the national Reproduction Rights Organization.

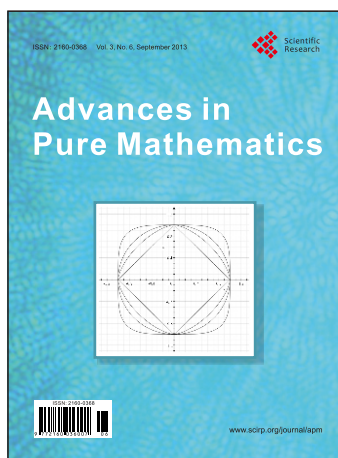
Requests for permission for other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale, and other enquiries should be addressed to the Publisher.

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

### **PRODUCTION INFORMATION**

For manuscripts that have been accepted for publication, please contact:

E-mail: [apm@scirp.org](mailto:apm@scirp.org)



**Call for Papers**

# Advances in Pure Mathematics (APM)

ISSN 2160-0368 (Print) ISSN 2160-0384 (Online)  
<http://www.scirp.org/journal/apm>

**Advances in Pure Mathematics (APM)** is an international journal dedicated to the latest advancement of ordered algebraic structures. The goal of this journal is to provide a platform for scientists and academicians all over the world to promote, share, and discuss various new issues and developments in different areas of ordered algebraic structures.

## Subject Coverage

This journal invites original research and review papers that address the following issues. Topics of interest include, but are not limited to:

- Applied Harmonic Analysis
- Approximation Theory
- Asymptotic Methods
- Bifurcation Theory
- Coding Theory
- Combinatorics
- Complex Analysis
- Convex Analysis
- Difference Equations
- Differential Equations
- Dynamical Systems
- Fixed-Point Theory
- Fourier Analysis
- Fractals
- Fractional Analysis
- Functional Differential Equations
- Fuzzy Mathematics
- Geometry
- Geometry of Banach Spaces
- Integral Equations
- Mathematical Biology, including Population Dynamics
- Mathematical Physics
- Matrix Theory
- Moment Theory
- Number Theory
- Numerical Analysis
- Operator Theory
- Optimal Control
- Optimization Wavelets
- Partial Differential Equations
- Probability
- Reaction-Diffusion Problems, Discrete Mathematics
- Scattering Theory
- Semigroups of Operators
- Signal Theory
- Special Functions
- Statistics
- Stochastic Process
- Topology and Applications
- Transport Theory
- Ultrametric Analysis
- Variational Methods

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the APM.

## Notes for Intending Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

## Website and E-Mail

<http://www.scirp.org/journal/apm>      E-mail: [apm@scirp.org](mailto:apm@scirp.org)

## ***What is SCIRP?***

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science, by delivering superior scientific publications and scientific information solution provider that enable advancement in scientific research.

## ***What is Open Access?***

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, world-wide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



**Scientific  
Research**

**Website: <http://www.scirp.org>  
Subscription: [sub@scirp.org](mailto:sub@scirp.org)  
Advertisement: [service@scirp.org](mailto:service@scirp.org)**