

ANALYSIS

INTERNATIONAL MATHEMATICAL JOURNAL
OF ANALYSIS AND ITS APPLICATIONS

EDITOR-IN-CHIEF

Q. Han, Notre Dame

EDITORIAL BOARD

V. Bögelein, Erlangen

M. Bohner, Rolla

M. Dalla Riva, Tulsa

R. Farwig, Darmstadt

B. Fritzsche, Leipzig

M. Pokorný, Prague

S. Rogosin, Minsk

F. Schulz, Ulm

Y. Tonegawa, Tokyo

L. Wang, Iowa City

T. Weth, Frankfurt

DE GRUYTER

ANALYSIS is devoted to the field of mathematical analysis, in particular classical analysis and its applications. Its aim is to publish the best research articles within the scope of the journal, as well as to boost the cooperation between scholars.

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/anly.

ABSTRACTED/INDEXED IN Baidu Scholar · CNKI Scholar (China National Knowledge Infrastructure) · CNPIEC: cnpLINKer · Dimensions · EBSCO (relevant databases) · EBSCO Discovery Service · Genamics JournalSeek · Google Scholar · Japan Science and Technology Agency (JST) · J-Gate · JournalGuide · JournalTOCs · KESLI-NDSL (Korean National Discovery for Science Leaders) · Mathematical Reviews (MathSciNet) · MyScienceWork · Naver Academic · Naviga (Softweco) · Primo Central (ExLibris) · Publons · QOAM (Quality Open Access Market) · ReadCube · SCImago (SJR) · SCOPUS · Semantic Scholar · Sherpa/RoMEO · Summon (ProQuest) · TDNet · Ulrich's Periodicals Directory/ulrichsweb · WanFang Data · WorldCat (OCLC) · X-MOL · Yewno Discover · zbMATH Open.

ISSN 0174-4747 · e-ISSN 2196-6753

RESPONSIBLE EDITOR Qing Han, University of Notre Dame, South Bend, Indiana, USA.
e-mail: qing.han.7@nd.edu

PUBLISHER Walter de Gruyter GmbH, Berlin/Boston, Genthiner Straße 13, 10785 Berlin, Germany

JOURNAL COORDINATOR Natalia Bialka, e-mail: natalia.bialka@degruyter.com

ADVERTISEMENTS e-mail: anzeigen@degruyter.com

© 2023 Walter de Gruyter GmbH, Berlin/Boston

TYPESETTING WisSat Publishing + Consulting GmbH, Fürstenwalde

PRINTING Franz X. Stöckle Druck und Verlag e.K., Ettenheim



Offenlegung der Inhaber und Beteiligungsverhältnisse gem. § 7a Abs. 1 Ziff. 1, Abs. 2 Ziff. 3 des Berliner Pressegesetzes: Die Gesellschafter der Walter de Gruyter GmbH sind: Cram, Gisela, Rentnerin, Berlin; Cram, Dr. Georg-Martin, Unternehmens-Systemberater, Stadtbergen; Cram, Maike, Wien (Österreich); Cram, Jens, Mannheim; Cram, Ingrid, Betriebsleiterin, Tuxpan/Michoacan (Mexiko); Cram, Sabina, Mexico, DF (Mexiko); Cram, Silke, Wissenschaftlerin, Mexico DF (Mexiko); Cram, Björn, Aachen; Cram, Berit, Hamm; Cram-Gomez, Susana, Mexico DF (Mexiko); Cram-Heydrich, Walter, Mexico DF (Mexiko); Cram-Heydrich, Kurt, Angestellter, Cancún (Mexiko); Duvenbeck, Brigitta, Oberstudienrätin i.R., Bad Homburg; Gädeke, Gudula, M.A., Atemtherapeutin/Lehrerin, Tübingen; Gädeke, Martin, Student, Ingolstadt; Gomez Cram, Arturo, Walter, Global Key Account Manager, Bonn; Gomez Cram, Ingrid Arlene, Studentin, Mexico, DF (Mexiko); Gomez Cram, Roberto, Assistant Professor, London (UK); Lubasch, Dr. Annette, Ärztin, Berlin; Schütz, Dr. Christa, Ärztin, Mannheim; Schütz, Sonja, Diplom.-Betriebswirtin (FH), Berlin; Schütz, Juliane, Berlin; Schütz, Antje, Berlin; Schütz, Valentin, Mannheim; Seils, Dorothee, Apothekerin, Stuttgart; Seils, Gabriele, Journalistin, Berlin; Seils, Christoph, Journalist, Berlin; Siebert, John-Walter, Pfarrer, Oberstenfeld; Anh Vinh Alwin Tran, Student, Zürich (Schweiz), Tran, Renate, Mediatorin, Zürich (Schweiz); Carmen Siebert, Angestellte, Kempten; Duyen Anh Johann Tran, Architekt, Zürich (Schweiz); Lang Lieu Laurin Tran, Lehrperson, Zürich (Schweiz); Duyen Mai Marie Tran, Studentin, Zürich (Schweiz); Anh Huy Merlin Tran, Schüler, Zürich (Schweiz).

Contents

Djamila Chergui, Ahcene Merad, Sandra Pinelas

Existence and uniqueness of solutions to higher order fractional partial differential equations with purely integral conditions — 1

Hanen Damak, Mohamed Ali Hammami

Stabilization by an estimated state controller of nonlinear time-varying systems — 15

Radhia Ghanmi, Tarek Saanouni

Global existence and blow-up of solutions for coupled bi-harmonic nonlinear wave equations — 31

Showkat Ahmad Dar, Mohammad Kamarujjama,

Richard Bruce Paris, Mohammad Idris Qureshi

Consequences of Srinivasa Ramanujan integrals involving Meijer's G -function — 49

Lilia Mahmoudi, Badreddine Meftah

Parameterized Simpson-like inequalities for differential s -convex functions — 59

