Tunisian Journal of Mathematics
an international publication organized by the Tunisian Mathematical Society

Welcome to the *Tunisian Journal of Mathematics*

Ahmed Abbes and Ali Baklouti

2019 vol. 1 no. 1

msp

TUNISIAN JOURNAL OF MATHEMATICS
Vol. 1, No. 1, 2019
dx.doi.org/10.2140/tunis.2019.1.1

Welcome to the *Tunisian Journal of Mathematics*

The Tunisian Journal of Mathematics (TJM) is an international publication organized by the Tunisian Mathematical Society and published in electronic and print formats by MSP (Mathematical Sciences Publishers) in Berkeley. It publishes research articles in all areas of mathematics. These will be selected by a distinguished, international board of editors (see next page) based on outstanding quality and interest, and according to the highest international standards.

The purpose of TJM is the advancement of mathematics. Editors evaluate submitted papers strictly on the basis of scientific merit. All articles submitted to this journal are peer-reviewed. The TJM uses single-blind peer review, which means that reviewers know who the authors of the manuscript are, but the authors do not know who the reviewers are.

The African continent is increasingly interested in scientific development, particularly in mathematics. The Tunisian Mathematical Society was founded in 1992 and is a permanent institutional member of the International Mathematical Union. It plays a major role in stimulating and sustaining high level mathematical research in Tunisia and its surrounding region. With the launch of this journal, the Tunisian Mathematical Society contributes to the development in Africa of scientific research meeting high international standards.

The TJM editorial board invites mathematicians from all over the world to take part in this stimulating project by submitting high-level research articles. Submissions can be made at https://ef.msp.org/submit/tunis.

AHMED ABBES
CNRS and IHES, France

ALI BAKLOUTI
Faculté des Sciences de Sfax, Tunisia

Editors-in-Chief

Editors-in-Chief

Ahmed Abbes CNRS *and* IHES, France

Ali Baklouti Faculté des Sciences de Sfax, Tunisia

Editorial Board

Hajer Bahouri CNRS *and* LAMA, Université Paris-Est Créteil, France

Arnaud Beauville Laboratoire J. A. Dieudonné, Université Côte d'Azur, France

Bassam Fayad CNRS *and* Institut de Mathematiques de Jussieu-Paris Rive Gauche, Paris, France

Benoît Fresse Université Lille 1, France

Dennis Gaitsgory Harvard University, United States

Emmanuel Hebey Université de Cergy-Pontoise, France

Mohamed Ali Jendoubi Université de Carthage, Tunisia

Sadok Kallel Université de Lille 1, France *and* American University of Sharjah, UAE

Minhyong Kim Oxford University, UK *and* Korea Institute for Advanced Study, Seoul, Korea

Toshiyuki Kobayashi The University of Tokyo *and* Kavlli IPMU, Japan

Yanyan Li Rutgers University, United States

Nader Masmoudi Courant Institute, New York University, United States

Haynes R. Miller Massachusetts Institute of Technology, Unites States

Nordine Mir Texas A&M University at Qatar *and* Université de Rouen Normandie, France

Detlef Müller Christian-Albrechts-Universität zu Kiel, Germany

Mohamed Sifi Université Tunis El Manar, Tunisia

Daniel Tataru University of California, Berkeley, United States

Sundaram Thangavelu Indian Institute of Science, Bangalore, India

Said Zarati Université Tunis El Manar, Tunisia

Tunisian Journal of Mathematics

msp.org/tunis

EDITORS-IN-CHIEF

Ahmed Abbes — CNRS & IHES, France — abbes@ihes.fr

Ali Baklouti — Faculté des Sciences de Sfax, Tunisia — ali.baklouti@fss.usf.tn

EDITORIAL BOARD

Hajer Bahouri — CNRS & LAMA, Université Paris-Est Créteil, France — hajer.bahouri@u-pec.fr

Arnaud Beauville — Laboratoire J. A. Dieudonné, Université Côte d'Azur, France — beauville@unice.fr

Bassam Fayad — CNRS & Institut de Mathématiques de Jussieu-Paris Rive Gauche, Paris, France — bassam.fayad@imj-prg.fr

Benoit Fresse — Université Lille 1, France — benoit.fresse@math.univ-lille1.fr

Dennis Gaitsgory — Harvard University, United States — gaitsgde@gmail.com

Emmanuel Hebey — Université de Cergy-Pontoise, France — emmanuel.hebey@math.u-cergy.fr

Mohamed Ali Jendoubi — Université de Carthage, Tunisia — ma.jendoubi@gmail.com

Sadok Kallel — Université de Lille 1, France & American University of Sharjah, UAE — sadok.kallel@math.univ-lille1.fr

Minhyong Kim — Oxford University, UK & Korea Institute for Advanced Study, Seoul, Korea — minhyong.kim@maths.ox.ac.uk

Toshiyuki Kobayashi — The University of Tokyo & Kavlli IPMU, Japan — toshi@kurims.kyoto-u.ac.jp

Yanyan Li — Rutgers University, United States — yyli@math.rutgers.edu

Nader Masmoudi — Courant Institute, New York University, United States — masmoudi@cims.nyu.edu

Haynes R. Miller — Massachusetts Institute of Technology, Unites States — hrm@math.mit.edu

Nordine Mir — Texas A&M University at Qatar & Université de Rouen Normandie, France — nordine.mir@qatar.tamu.edu

Detlef Müller — Christian-Albrechts-Universität zu Kiel, Germany — mueller@math.uni-kiel.de

Mohamed Sifi — Université Tunis El Manar, Tunisia — mohamed.sifi@fst.utm.tn

Daniel Tataru — University of California, Berkeley, United States — tataru@math.berkeley.edu

Sundaram Thangavelu — Indian Institute of Science, Bangalore, India — veluma@math.iisc.ernet.in

Saïd Zarati — Université Tunis El Manar, Tunisia — said.zarati@fst.utm.tn

PRODUCTION

Silvio Levy — (Scientific Editor) — production@msp.org

The Tunisian Journal of Mathematics is an international publication organized by the Tunisian Mathematical Society (http://www.tms.rnu.tn) and published in electronic and print formats by MSP in Berkeley.

See inside back cover or msp.org/tunis for submission instructions.

The subscription price for 2019 is US $\$TBA$/year for the electronic version, and $\$TBA$/year (+$\$TBA$, if shipping outside the US) for print and electronic. Subscriptions, requests for back issues and changes of subscriber address should be sent to MSP.

Tunisian Journal of Mathematics (ISSN 2576-7666 electronic, 2576-7658 printed) at Mathematical Sciences Publishers, 798 Evans Hall #3840, c/o University of California, Berkeley, CA 94720-3840 is published continuously online. Periodical rate postage paid at Berkeley, CA 94704, and additional mailing offices.

TJM peer review and production are managed by EditFlow® from MSP.

PUBLISHED BY

mathematical sciences publishers

nonprofit scientific publishing

http://msp.org/

© 2019 Mathematical Sciences Publishers

Tunisian Journal of Mathematics
2019 vol. 1 no. 1

Welcome to the Tunisian Journal of Mathematics 1
Ahmed Abbes and Ali Baklouti

Partial resolution by toroidal blow-ups 3
János Kollár

Construction of a stable blowup solution with a prescribed behavior for a non-scaling-invariant semilinear heat equation 13
Giao Ky Duong, Van Tien Nguyen and Hatem Zaag

Troisième groupe de cohomologie non ramifiée des hypersurfaces de Fano 47
Jean-Louis Colliot-Thélène

On the ultimate energy bound of solutions to some forced second-order evolution equations with a general nonlinear damping operator 59
Alain Haraux

On the irreducibility of some induced representations of real reductive Lie groups 73
Wee Teck Gan and Atsushi Ichino

Truncated operads and simplicial spaces 109
Michael S. Weiss

From compressible to incompressible inhomogeneous flows in the case of large data 127
Raphaël Danchin and Piotr Bogusław Mucha