IECMSA - 2015

4TH INTERNATIONAL EURASIAN CONFERENCE ON MATHEMATICAL SCIENCES AND APPLICATIONS

BOOK OF ABSTRACTS



31 AUGUST - 03 SEPTEMBER 2015 - - - ATHENS - GREECE

www.iecmsa.org

4th INTERNATIONAL EURASIAN CONFERENCE ON MATHEMATICAL SCIENCES AND APPLICATIONS

BOOKS OF ABSTRACTS

31 AUGUST - 03 SEPTEMBER 2015
ATHENS-GREECE

FOREWORD

The "4th International Eurasian Conference on Mathematical Sciences and Applications (IECMSA-2015)" jointly organized by Sakarya University, Kocaeli University, Bilecik Seyh Edebali University, Turkic World Mathematical Society, University of Hassan II, University of Mohammed V and International Balkan University, will be hold on 1 August--3 September 2015 in Athens, Greece.

The series of the International Eurasian Conference on Mathematical Sciences and Applications provide communication between the members of the mathematics community, interdisciplinary researchers, educators, statisticians and engineers. These conferences are held every year in different countries with distinguished participants from all over the world and they build agelong Cultural Bridges.

After the following three very successful international conferences the IECMSA-2012, Prishtine, Kosovo, IECMSA-2013, Sarajevo, Bosnia and Herzegovina, IECMSA-2014, Vienna, Austria, now IECMSA-2015, Athens, Greece, hosts 300 esteemed participants from 28 different countries .

IECMSA-2015 has taken a lot of applications all over the world. These big numbers of applications have given us opportunity to choose the best ones to reach the higher scientific level. After having been reviewed by the distinguished members of International Scientific Committee; 187 oral and 43 poster presentations have been accepted and the abstracts of them have been presented in this book. Moreover, five worldwide distinguished speakers have been invited to the conference and the abstracts of the plenary talks have been substituted in this book, too. The electronic version of the abstracts of all presentations can be found in the Conference Abstracts Book at www.iecmsa.org

I wish to thank all members of scientific committee and sponsors for their continued support to the IECMSA-2015. And finally, I would like to sincerely thank all the participants of IECMSA-2015 for contributing to this great meeting in many different ways. I believe and hope that each of them will get the maximum benefit from the conference. Welcome to Athens!

Prof. Dr. Murat TOSUN
Chairman
On behalf of the Organizing Committee

HONORARY COMMITTEE

Prof. Dr. Muzaffer ELMAS (Sakarya University Rector)

Prof. Dr. Azmi ÖZCAN (Bilecik Seyh Edebali University Rector)

Prof. Dr. Sadettin HÜLAGÜ (Kocaeli University Rector)

Prof. Dr. Idriss MANSOURI (Hassan University Rector)

Prof. Dr. Saaid AMZAZI (Mohammed University Rector)

Prof. Dr. Ismail KOCAYUSUFOĞLU (Intenational Balkan Univeristy Rector)

SCIENTIFIC COMMITTEE

Prof. Dr. Abdullah Aziz ERGİN (Akdeniz University)

Prof. Dr. Adnan TERCAN (Hacettepe University)

Prof. Dr. Alexander ZLOTNIK (National Research University Higher School of Economics)

Prof. Dr. Arif SALIMOV (Ataturk University)

Prof. Dr. Arkadii KIM (Institute of Mathematics and Mechanics of Russian Academy of Sciences)

Prof. Dr. Bayram ŞAHİN (Inonu University)

Prof. Dr. Bo Wun HUANG (Cheng Shiu University)

Prof. Dr. Claudio Rodrigo Cuevas HENRIQUEZ (Federal University of Pernambuco)

Prof. Dr. Danal O'REGAN (National University of Ireland)

Prof. Dr. Ekrem SAVAŞ (Istanbul Commerce University)

Prof. Dr. Emin ÖZÇAĞ (Hacettepe University)

Prof. Dr. Emine MISIRLI (Ege University)

Prof. Dr. Fethi ÇALLIALP (Dogus University)

Prof. Dr. Fikret ALİYEV (Baku State University)

Prof. Dr. George BOGOSLOVSKY (Moscow State University)

Prof. Dr. Gennady A. LEONOV (Saint-Petersburg State University)

Prof. Dr. H. Hilmi HACISALİHOĞLU (Bilecik Seyh Edebali University)

Prof. Dr. Halis AYGÜN (Kocaeli University)

Prof. Dr. Hellmuth STACHEL (Vienna Technical University)

Prof. Dr. Jan Van MILL (VU Amsterdam University)

Prof. Dr. Kadri ARSLAN (Uludag University)

Prof. Dr. Kailash Chander MADAN (Ahlia University)

Prof. Dr. Kil Hyun KWON (Korea Advanced Institute of Science and Technology)

Prof. Dr. Khalil EZZENBI (Cadi Ayyad University)

Prof. Dr. Laszlo LEMPERT (Purdue University)

Prof. Dr. Mahir RESULOV (Beykent University)

Prof. Dr. Mahmut ERGÜT (Firat University)

Prof. Dr. Maksymilian DRYJA (Waraw University)

Prof. Dr. Muhammad Rashid Kamal ANSARI (Sir Syed University of Engineering and Technology)

Prof. Dr. Mukut Mani Tripathi (Banaras Hindu University)

Prof. Dr. Murat ALTUN (Uludag University)

Prof. Dr. Mustafa ÇALIŞKAN (Gazi University)

Prof. Dr. Muvarskhan JENALIYEV (Institute of Mathematics and Mathematical Modeling)

Prof. Dr. Müjgan TEZ (Marmara University)

Prof. Dr. Naime EKİCİ (Cukurova University)

Prof. Dr. Nuri KURUOĞLU (Bahcesehir University)

Prof. Dr. Ömer AKIN (TOBB University of Economy and Technology)

Prof. Dr. Pedro MACEDO (University of Aveiro)

Prof. Dr. Prasanta SAHOO (Jadavpur University)

Prof. Dr. Ram N. MOHAPATRA (University of Central Florida)

Prof. Dr. Reza LANGARI (Texas A&M University)

Prof. Dr. Roberto BARRIO (University of Zaragoza)

Prof. Dr. Sadik KELEŞ (Inonu University)

Prof. Dr. Saeid ABBASBANDY (Imam Khomeini International University)

Prof. Dr. Sergeev Armen GLEBOVIC (Steklov Mathematical Institute)

Prof. Dr. Snezhana HRISTOVA (Plovdiv University)

Prof. Dr. Toka DIAGANA (Howard University)

Prof. Dr. Walter RACUGNO (University of Cagliari)

Prof. Dr. Wolfgang SPROESSING (Freiberg University of Mining and Technology)

Prof. Dr. Varga KALANTAROV (Koc University)

ORGANIZING COMMITTEE

Prof. Dr. Murat TOSUN (Sakarya University)

Prof. Dr. Cihan ÖZGÜR (Balikesir University)

Prof. Dr. Kazım İLARSLAN (Kirikkale University)

Prof. Dr. Ahmet KÜÇÜK (Kocaeli Univeristy)

Assoc. Prof. Dr. Erdal ÖZÜSAĞLAM (Aksaray University)

Assoc. Prof. Dr. Mehmet Ali GÜNGÖR (Sakarya University)

Assoc. Prof. Dr. Melek MASAL (Sakarya University)

Assoc. Prof. Dr. Nesip AKTAN (Necmettin Erbakan University)

Assoc. Prof. Dr. Soley ERSOY (Sakarya University)

Assoc. Prof. Dr. Şevket GÜR (Sakarya University)

Assist. Prof. Dr. Ayşe Zeynep AZAK (Sakarya University)

Assist. Prof. Dr. Mahmut AKYİĞİT (Sakarya University)

Assist. Prof. Dr. Mehmet GÜNER (Sakarya University)

Assist. Prof. Dr. Murat SARDUVAN (Sakarya University)

Dr. Canay AYKOL YÜCE (Ankara University)

SECRETARIAT

Prof. Dr. Murat TOSUN (Sakarya University)

Research Assist. Hidayet Hüda KÖSAL (Sakarya University)

Research Assist. Tülay ERİŞİR (Sakarya University)

Researcher Selman HIZAL (Sakarya University)

On Reflections and Cartan-Dieudonné Theorem in Minkowski 3-space

Mustafa Özdemir[1] and Melek Erdoğdu[2]

Abstract. In this paper, we investigate the reflections in Minkowski 3-space by three different appoach. Firstly, we define Lorentzian reflections with Lorentzian inner product. Then, we examine Lorentzian reflections in view of Lorentzian Householder matrices. Finally, we use pure split quaternions to derive Lorentzian reflections. For each case, we find the matrix representation of Lorentzian reflections and characterize the plane of reflection by using this matrix representation. Morever, we prove the Cartan-Dieudonne Theorem in the Minkowski space.

Keywords. Minkowski Space, Reflections, Rotations, Cartan-Dieudonne Theorem.

AMS 2010. 5B10, 15A16, 53B30

References

[1] Özdemir M., Erdoğdu M., Şimşek H., *On the Eigenvalues and Eigenvectors of a Lorentzian Rotation Matrix by Using Split Quaternions*. Adv. Appl. Clifford Algebras 24, 179-192, 2014.

[2] Özdemir, M., A.A. Ergin, *Rotations with unit timelike quaternions in Minkowski 3-space*, Journal of Geometry and Physics. 56, 322-336, 2006.

[3] Özdemir, M., *The Roots of a Split Quaternion*, Applied Mathematics Letters. 22, 258-263, 2009.

[4] Gonzalez, G. A., Aragon, J. L., Rodriguez-Andrade, M. A., Verde, L., Reflections, *Rotations and Pythagorean Numbers*, Adv. Appl. Clifford Algebras. 19, 1-14, 2009.

[5] Gonzalez, G. A., Aragon, J. L., Rodriguez-Andrade, M. A., *Pythagorean Vectors and Clifford Numbers*, Adv. Appl. Clifford Algebras. 21, 247-258, 2011.

[6] Rodriguez-Andrade, M. A., Gonzalez, G. A., Aragon, J. L., Verde, L., *An Algorithm for Cartan-Dieudonne Theorem on Generalized Scalar Product Space*, Linear Algebra and Its Applications. 434, 1238-1254, 2011.

[1] Akdeniz University, Antalya, Turkey, mozdemir@akdeniz.edu.tr, mozdemir07@gmail.com
[2] Necmettin Erbakan University, Konya, Turkey, merdogdu@konya.edu.tr