



Introduction to Special Issue: Design and Performance of Networks on Chip

Abderazek Ben Abdallah¹, Ramachandran Vaidyanathan², Ezendu Ariwa³ and Wael El-Medany⁴

¹*School of Computer Science and Engineering, The University of Aizu, Japan*

²*School of Electrical Engineering and Computer Science, Louisiana State University, USA*

³*University of Bedfordshire, UK, Chair, IEEE UKRI Consumer Electronics & Broadcast Technology Chapter*

⁴*Department Of Computer Engineering, University Of Bahrain, Bahrain*

Preamble: This special issue of International Journal of Computing and Digital Systems (IJCDs) focuses on Design and Performance of Networks on Chip, and publishes selected papers from the 2nd International Workshop on Design and Performance of Networks on Chip (DPNoC 2015), which has been held on August 17-20, 2015, Belfort, France [1, 2], and was organized in conjunction with the 10th International Conference on Future Networks and Communications (FNC 2015) [3]. This workshop represented an international forum for researchers from both academia and industry to expose the latest trends, research findings, and emerging issues in the on-chip networking area and its design and performance. The first International Workshop on the Design and Performance of Networks on Chip (DPNoC 2014) was held on August 17-20, 2014, Niagara Falls, Ontario, Canada [4, 5]. The international workshop DPNoC'2014 was organized in conjunction with the 9th International Conference on Future Networks and Communications, Niagara Falls, Ontario, Canada, August 17-20, 2014 [6].

The DPNoC 2015 workshop has attracted papers from authors from several countries across the world. Each paper was reviewed by the members of program committee. The accepted papers cover a range of topics related to the theme of DPNoC 2015. From the conference accepted papers, only five have been selected to be submitted as extended versions in the special issue on Design and Performance of Networks on Chip in the journal special issue, in addition to one more paper selected from normal submission to the IJCDs journal.

Keywords: Networks on Chip, NoC paradigm, on-Chip Systems, VLSI, FPGA

1. INTRODUCTION

During the past few decades, technology enabled the aggressive scaling and continuous shrinkage of transistors dimension on modern microchips. This made the integration of billions of transistors on a single chip achievable. With such high integration level available, the development of many cores on a single die has become possible. As the number of cores keeps increasing, the employment of efficient and scalable interconnect fabrics has become imperative. Traditional on-chip interconnect schemes, such as point-to-point, shared bus, and the crossbar, are no longer reliable to provide the necessary communication among the processor cores. Network-on-Chip (NoC) is recently viewed as the ultimate solution for the design of modular and scalable communication fabrics, able to provide support to the integration of complex heterogeneous cores through the standardization of the network boundary. This Special Issue focuses on issues related to architectures and design methodologies of on-chip interconnection networks based on the NoC paradigm.

In this special issue, we present five papers that embody the wide range of issues, approaches and interests in the area of on-chip interconnect networks. The first paper is on "NoC Dimensioning from mathematical models" with authors Virginie Fresse, Catherine Combes, Matthieu Payet and Frédéric Rousseau. They propose a mathematical framework that models the relationship between an application task graph, the communication architecture and the resource usage on platform (FPGA in this case) [7]. The next paper, "The Performance of NoCs for Very Large Manycore Systems under Locality-based Traffic," by Sharifa Al Khanjari and Wim Vanderbauwhede studies latency and throughput of NoCs based on well-known topologies under assumptions of physical data expected in 2023 and



underscores the importance of communication locality [8]. The third paper is entitled “Group based Shortest Path Routing Algorithm for Hierarchical Cross Connected Recursive Networks (HCCR)” and is authored by Omair Inam, Sharifa Al Khanjari, Wim Vanderbauwhede and proposes the Hierarchical Cross Connected Recursive network. The paper develops topological properties of the network and studies its performance for Group-Based shortest path routing [9]. The fourth paper by Michael O. Agyeman, Kenneth Tong and Terrence Mak is entitled “An Improved Wireless Communication Fabric for Performance Aware Network-on-Chip Architectures.” It studies device-level changes to improve the performance of wireless NoCs [10]. The final paper by Jawwad Latif, Sadia Azam, Hassan N. Chaudhry and Tahir Muhammad is entitled “Performance Evaluation of Modern Network-on-Chip Router Architectures.” This paper explores the application of switch folding to Dual Xbar routers, showing tradeoffs between buffer energy and performance [11]. The final paper, “Embedded Systems Design Using Event-B Theories,” is authored by Abdelhamid Hariche, Mostafa Belarbi and Abdallah Chouarfia. It studies a framework for modeling aspects of embedded systems, including NoCs, managing design complexity through abstraction and refinement.

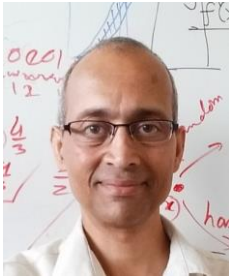
REFERENCES

- [1] W. Elmedany. (2015, 30/1/2016). *The 2nd International Workshop on Design and Performance of Networks on Chip* Available: <http://www.intnoc.org/dpnoc15/>
- [2] E. Shakshuki. (2015, 30/1/2016). *FNC 2015 Approved Workshops*. Available: http://cs-conferences.acadiau.ca/fnc-15/#workshop_approved
- [3] E. Shakshuki. (2015, 30/1/2016). *The 10th International Conference on Future Networks and Communications*. Available: <http://cs-conferences.acadiau.ca/fnc-15/>
- [4] W. Elmedany. (2014, 30/1/2016). *The 2014 International Workshop on the Design and Performance of Networks on Chip*. Available: <http://www.intnoc.org/>
- [5] E. Shakshuki. (2014, 30/1/2016). *FNC 2014 Approved Workshops*. Available: http://cs-conferences.acadiau.ca/fnc-14/#workshop_approved
- [6] E. Shakshuki. (2014, 30/1/2016). *The 9th International Conference on Future Networks and Communications*. Available: <http://cs-conferences.acadiau.ca/fnc-14/>
- [7] V. Fresse, C. Combes, M. Payet, and F. Rousseau, "Methodological Framework for NoC Resources Dimensioning on FPGAs," *Procedia Computer Science*, vol. 56, pp. 391-396, 2015.
- [8] S. Al Khanjari and W. Vanderbauwhede, "The Impact of Traffic Localisation on the Performance of NoCs for Very Large Manycore Systems," *Procedia Computer Science*, vol. 56, pp. 403-408, 2015.
- [9] O. Inam, S. Al Khanjari, and W. Vanderbauwhede, "Shortest Path Routing Algorithm for Hierarchical Interconnection Network-on-Chip," *Procedia Computer Science*, vol. 56, pp. 409-414, 2015.
- [10] M. O. Agyeman, K. Tong, and T. Mak, "An Improved Wireless Communication Fabric for Emerging Network-on-Chip Design," *Procedia Computer Science*, vol. 56, pp. 415-420, 2015.
- [11] J. Latif, H. N. Chaudhry, and S. Azam, "Design Trade off and Performance Analysis of Router Architectures in Network-on-Chip," *Procedia Computer Science*, vol. 56, pp. 421-426, 2015.



Abderazek Ben Abdallah is a full Professor of Computer Science and Engineering and Head of the Division of Computer Engineering, The University of Aizu, Japan. He is also directing the Adaptive Systems Laboratory at the School of Computer Science and Engineering, the University of Aizu, Japan. Prior to joining the University of Aizu, he was a faculty member at the Graduate School of Information Systems, The University of Electro-Communications at Tokyo from 2002-2007. He received his B.S. degree in Electrical Engineering, and his M.S. degree in Computer Engineering from Huazhong Univ. of Science and Technology in 1994, and 1997, respectively. He received his PhD degree in Computer Engineering from the Univ. of Electro-Communications at Tokyo in 2002. Dr. Ben Abdallah's research interest includes power- and reliability-aware computing, adaptive multicore processor architectures, intra- and inter-chip communication networks, and high-performance computing architectures. He is author or co-author of around 200 book chapters, books, theses, journal publications, conference papers and patents. His research has been funded by academic institutions, industry

and governmental agencies. He was awarded the 2010 Presidential Prize for scientific research and technology, and several best paper awards. He has frequently consulted for international governmental and industrial bodies. Dr. Ben Abdallah served on the chair, editorial, and review boards of several journals and conferences including, founding and steering chair of the IEEE MCSoc Symposium Series. He has been also involved in organizing many symposia, and conferences sponsored by professional organizations as well as guest editor of special issues in journals, such as IEEE Transactions on Emerging Topics in Computing. He is a senior member of IEEE, and a member of ACM and IEICE.



Ramachandran Vaidyanathan received his B-Tech and M-Tech degrees from the Indian Institute of Technology, Kharagpur, in 1983 and 1985, respectively, and a PhD degree from Syracuse University, USA in 1990. Since then he has been a faculty member in the Division of Electrical and Computer Engineering at Louisiana State University, Baton Rouge, where he is currently the Elaine T. and Donald C. Delaune Distinguished Associate Professor. His research interests include parallel and distributed computing, algorithms, reconfigurable systems, and interconnection networks. He is also active in techniques for improving undergraduate and graduate education. His research has been supported by State and Federal agencies, including the national Science Foundation. He has served in lead roles in the Reconfigurable Architectures Workshop (RAW) over several years and, more recently, in the International Parallel and Distributed Processing Symposium (IPDPS) Workshops, the NSF/TCPP Workshop on Parallel and

Distributed Computing Education (EduPar), and the Workshop on Connecting Concepts across the Curriculum (CCC). He is a senior member of the IEEE.



Ezendu Ariwa is a full Professor and Chair of IEEE Consumer Electronics Chapter, United Kingdom & Ireland (UK&I), Chair of IEEE Broadcast Technology Chapter, UK&I, Chair of IEEE Technology & Engineering Management Society Chapter, UK&I. He is a Senior Member of Institute of Electrical & Electronic Engineers (SMIEEE). He is a Director of Studies at the London School of Commerce (Associate College of Cardiff Metropolitan University, UK) and held the post of Professor of Computer Science at the University of Bedfordshire, UK, in the Department of Computer Science and Technology with Specialty in Computer Science and Technology. He co-ordinates international PhD research and Director of Studies for PhD supervision. He holds the position of Chartered Fellow of British Computer Society (CITP, FBCS), Fellow of the Institute of IT Training (FIITT), Fellow of the Royal Society of Arts (FRSA), Fellow of the Higher Education Academy (FHEA), Senior Member of Institute of Electrical & Electronic Engineers

(SMIEEE), Fellow of Global Strategic Management Inc., USA, and Fellow of the Institute of Leadership and Management (FInstLM). He published various articles in the areas of Information Systems, Knowledge Management, Business Intelligence, Green Computing and IT Security, Corporate Social Responsibility, E-Commerce, E-Learning and Technology Enhanced Learning, Informatics Efficacy & Enterprise Applications and Facilities Management. In addition, He published books in the specialist discipline as well as contributed few chapters to textbooks. Professor Ezendu Ariwa is a renowned scholar and a sponsored Keynote Speaker at highly powered internationally conferences as a leading guru in the field of Green Technology and Corporate Sustainability as well as Energy Management Systems, Open Learning Strategy and Engineering Sustainability. He published number of books and more than 200 papers in international journals and conference proceedings. He recently published two books: Green Technology Applications for Enterprise and Academic Innovation, and Africa Business, Sustainability and Technology Innovation Practices.



Wael Elmedany holds a PhD degree in Electrical Engineering, Manchester University, UK, 1999; MSc degree in computer communications, Menoufia University, Egypt, 1991; BSc degree in Electronic Engineering, Menoufia University, Egypt 1987. He is the founding and managing editor of International Journal of Computing and Digital Systems (IJCDs). He has been invited as a Guest Editor for Inderscience special issue on International Journal of Embedded Systems entitled "Reconfigurable Architectures and Self-adaptive Autonomic Systems". He is the organizer and Program Chair of MobiApps 2014, 27-29 August 2014, Barcelona, Spain and DPNoc 2014, August 17-20, 2014, Niagara Falls, Ontario, Canada; he is also Program Chair of RASAS'14, September 24-27, 2014, Delhi, India. El-Medany is also IEEE member. He is a member of editorial boards and technical program committees of many international

journals and conferences, reviewer in many international journals and conferences, and acts as chairperson in many conferences. El-Medany has around forty publications, and attended several national and international conferences and workshops. His research interests in ASIC design, FPGA, embedded systems, remote monitoring systems, and reconfigurable computing.

**Workshop Organizing Committee****Workshop Chairs****Dr. Wael M El-Medany**

Department Of Computer Engineering,
University Of Bahrain, Bahrain
welmedany@uob.edu.bh

Dr. Samia Loucif

Software Engineering Department
ALHOSN University , UAE
samia.loucif@ieee.org

Publicity Chair**Dr. Adel Ahmed Abdulla,**

Secretary, IEEE,
Bahrain Section, Bahrain
dr.adel@ieee.org

International Program Committee:

Manu Malek, Stevens Institute of Technology, USA
Tarek El-Ghazawi, George Washington University, USA
Elhadi Shakshuki, Acadia University, Canada
Abdel-Hameed A. Badawy, George Washington Univ.&Arkansas Tech Univ., USA
Nader Anani, Manchester Metropolitan University, UK
S. K. Niranjana, Sri Jayach College of Engineering, India
Theo Kanter, Stockholm University, Sweden
Ezendu Ariwa, University of Bedfordshire, United Kingdom
Nik Bessis , University of Derby, United Kingdom
Afrand Agah, West Chester University of Pennsylvania, USA
Massimiliano Laddomada, Texas A&M-Texarkana, USA
Pascal Lorenz, University of Haute Alsace, France
Gennaro Boggia, Politecnico di Bari, Italy
Ali Zoliat, University of Bahrain
Yung-Fa Huang, ChaoYang University of Technology, Taiwan
Harry Skianis, University of the Aegean, Greece
Wei Yu, Towson University, USA
Vamsi Paruchuri, University of Central Arkansas, USA
Mohamed A. Azim, Taibah University, Saudi Arabia
Aiman El-Maleh, King Fahd University of Petroleum & Minerals, KSA
George Tombras, National and Kapodistrian University of Athens, Greece
Salah Bourennane, Ecole Centrale Marseille Fresnel Institute, France
Stefanos Gritzalis, University of the Aegean, Greece
Maaruf Ali, University of Ha'il, Saudi Arabia



Javier Aguiar, University of Valladolid, Spain
Marek Miskowicz, AGH University of Science and Technology, Poland
James Conrad, University of North Carolina at Charlotte, USA
Sameera Abar, University College Dublin / IBM-Ireland, Ireland
Maurizio Naldi, University of Rome "Tor Vergata, Italy
Mukhtar Ahmad, Aligarh Muslim University, India
Osamu Ono, Meiji University, Japan
Ahmed Abdelgawad , Central Michigan University, USA
Aniello Castiglione, Università di Salerno, Italy
Sasan Adibi, Royal Melbourne Institute of Technology, Australia
Khalil Sayidmarie, University of Mosul, Iraq
Sławomir Kukliński, Warsaw University of Technology, Poland
Manar Mohaisen, Korea University of Technology and Education, Korea
Tuan-Anh Le, Posts and Telecommunications Institute of Technology, Vietnam
David Naccache, ENS, France
Weirong Jiang, Xilinx, USA
Hessa Al-Junaid, University of Bahrain, Bahrain
Chia-Pang Chen, National Taiwan University, Taiwan
Hosam El-Ocla, Lakehead University, Canada
Tarek Bejaoui, University of Paris-Sud 11, France
Luis Teixeira, Universidade Catolica Portuguesa, Portugal
An He, Qualcomm, USA
Samy Ghoniemy, ASU, Egypt
Yasser Ismai, University of Bahrain, Bahrain
Vinay Kumar, Charles III University of Madrid, Spain
Fakhrul Alam, Massey University, New Zealand
Mehran Asadi, West Chester University of Pennsylvania, USA
Abdelmajid Khelil, European Research Center, Germany
Wei Zhan, Texas A&M University, USA
Norian Marranghello, São Paulo State University - UNESP, Brazil
Yasin KABALCI, Nigde, University, TURKEY
Amitava Biswas, Cisco Systems, USA
Mohammad Mozumdar, California State University, USA
S. K. Niranjan, Karnataka, India
Hani Hamdan, SUPELEC, France
Hamid Alasadi, Basra University, Iraq
Amjad Daoud, Isra University, Jordan



List of Reviewers

Givename	Surname	Affiliation	Country
Ahmed	Abdelgawad	Central Michigan University	USA
Subrata	Acharya	Towson University	USA
Afrand	Agah	West Chester University of Pennsylvania	USA
Mehran	Asadi	The Lincoln University	USA
Amitava	Biswas	Cisco Systems	USA
Haibo	Cao	Skyworks Solutions, Inc.	USA
Debraj	De	Missouri University of Science & Technology	USA
Visvasuresh Victor	Govindaswamy	Concordia University	USA
Kyriakos	Manousakis	Applied Communication Sciences	USA
Reshmi	Mitra	University of North Carolina at Charlotte	USA
Vishnu	Pendyala	Santa Clara University	USA
Tirumale	Ramesh	Advanced Computing Consultant	USA
Ameya	Sanzgiri	University at Buffalo	USA
Wei	Sun	South Dakota State University	USA
Chiranjib	Sur	University of Florida	USA
Alireza	T. Bolorchi	KLA-Tencor	USA
Cong	Wang	University of Massachusetts, Amherst	USA
Yanfang	Ye	West Virginia University	USA
Wei	Zhan	Texas A&M University	USA
Faheem	Ahmed	Thompson Rivers University	Canada
Yassine	Bouslimani	University of Moncton	Canada
Qi	Chai	University of Waterloo	Canada
Amir	Darehshoorzadeh	University of Ottawa	Canada
Gul	Khan	Ryerson University	Canada
Michael	McGuire	University of Victoria	Canada
Mridula	Sharma	University of Victoria	Canada
Tejinder	Singh	University of Waterloo	Canada
Salah	Al-iesawi	Newcastle	United Kingdom
Dhiya	Al-Jumeily	Liverpool John Moores University	United Kingdom
Ali	Al-Sherbaz	The University of Northampton	United Kingdom
Abdulkadir	Alkali	Sheffield Hallam University	United Kingdom
Leandros	Maglaras	De Montfort University School of Electrical Engineering and Computer Science, The University of Newcastle	United Kingdom
Hamid	Alinejad-Rokny	University of Sydney	Australia
Saber	Jafarizadeh	University of Sydney	Australia
Himanshu	Pahuja	Monash University	Australia
Ali	Rafiei	University of Technology Sydney	Australia
Olugbenga	Olubodun	University of Swansea	United Kingdom
Samia	Loucif	AlHosn University	UAE



Muharrem	Tümçakır	Aselsan Inc. Defense Systems Technologies Division	Turkey
Chi-Hua	Chen	Chunghwa Telecom Co., Ltd.	Taiwan
Lien-Wu	Chen	Feng Chia University	Taiwan
Shin-Ming	Cheng	National Taiwan University of Science and Technology	Taiwan
Ming-Chin	Chuang	Academia Sinica	Taiwan
Yuan-Cheng	Lai	Information Management, NTUST	Taiwan
Po-Hsuan	Tseng	National Taipei University of Technology	Taiwan
Kim	Nevelsteen	Stockholm University	Sweden
Salvador	Alcaraz	Miguel Hernandez University	Spain
Michail	Alvanos	Universitat Politècnica de Catalunya	Spain
Jose	Claver	Universidad de Valencia	Spain
Marc	Domingo-Prieto	Universitat Oberta de Catalunya	Spain
Beatriz	Sainz	University of Valladolid	Spain
Raouf	Senhadji-Navarro	University of Seville	Spain
Giuseppe	Avellone	STMicroelectronics	Italy
Luca	Bedogni	University of Bologna	Italy
Ruggero	Donida Labati	Università degli Studi di Milano	Italy
Alireza	Abdollahpouri	University of Hamburg	Germany
Nicola	Altan	University of Duisburg-Essen	Germany
Sergej	Andruschenko	Pulsion Medical SE	Germany
Thomas	Basmer	IHP- Leibniz-Institut für Innovative Mikroelektronik	Germany
Mahdi	Bohlouli	University of Siegen	Germany
Philipp	Glatz	Ifm Electronic	Germany
Horst	Hellbrück	University of Applied Sciences Lübeck	Germany
Ilka	Miloucheva	Media Applications Research	Germany
Mumtaz	Ahmad	INRIA-Nancy	France
Sahbi	Baccar	University of Rouen	France
Yuanfang	Chen	Institut Mines-Telecom, Telecom SudParis	France
Catherine	Combes	University of Saint Etienne	France
Virginie	Fresse	Université Jean Monnet, Saint Etienne	France
David	Naccache	ENS	France
Matthieu	Payet	Jean Monnet University	France
Giuseppe	Piro	Politecnico di Bari	Italy
Pradeep Kumar	Gupta	University of Pretoria	South Africa
Kai	Li	Singapore University of Technology and Design College of Computers and Information Technology, Taif University	Singapore
Rashid	Ali	Technology, Taif University	Saudi Arabia
Andrey	Brazhnikov	Siberian Federal University	Russia
Radu	Arsinte	Technical University of Cluj-Napoca	Romania



Ihab	Al-Jayyousi	Qatar University	Qatar
Octavian	Postolache	Instituto de Telecomunicações, Lisboa/IT GIK Institute of Engineering Sciences & Technology	Portugal
Ghulam	Abbas		Pakistan
Waqas	Bangyal	Iqra University, Islamabad	Pakistan
Fawaz	Bokhari	PUCIT - University of the Punjab	Pakistan
Muhammad	Ibrar-ul-haque	Sir syed University Of Engineering & Technology Sarhad University of Science and Information Technology, Peshawar	Pakistan
Javed	Iqbal		Pakistan
Yuhan	Dong	Tsinghua University	P.R. China
Qi	Zeng	Southwest Jiaotong University	P.R. China
Kanglian	Zhao	Nanjing University	P.R. China
Fakhrul	Alam	Massey University	New Zealand
Lei	Qian	The University of Auckland	New Zealand
Paulus	Sheetekela	University of Namibia	Namibia
Noura	Aknin	Abdelmalek Essaadi University	Morocco
César	Cárdenas	Tecnológico de Monterrey - Campus Querétaro	Mexico
Nor Azlina	Ab Aziz	Multimedia University	Malaysia
Maythem	Abbas	Universiti Teknologi PETRONAS	Malaysia
Mohd Helmy	Abd Wahab	Universiti Tun Hussein Onn Malaysia	Malaysia
Mohd Syaiful Rizal	Abdul Hamid	University Technical Malaysia Melaka	Malaysia
Sakena	Abdul Jabar	Universiti Malaysia Sarawak	Malaysia
Mohammad Faiz Liew	Abdullah	Universiti Tun Hussein Onn Malaysia (UTHM)	Malaysia
Yousef	Abuzawayda	University Kebangsaan Malaysia	Malaysia
Asmala	Ahmad	Universiti Teknikal Malaysia Melaka	Malaysia
Badrul Hisham	Ahmad	Universiti Teknikal Malaysia Melaka	Malaysia
Farooq	Ahmad	Universiti Teknologi PETRONAS	Malaysia
Abdul Halim	Ali	Universiti Kuala Lumpur - International College	Malaysia
Hassen	Alsafi	IIUM	Malaysia
Mohd	Baba	Universiti Teknologi MARA	Malaysia
Kamaluddeen	Danyaro	Universiti Teknologi PETRONAS	Malaysia
Nor Muzlifah	Mahyuddin	Universiti Sains Malaysia (USM)	Malaysia
Abdullah	Muhammed	Universiti Putra Malaysia	Malaysia
Ateeq-Ur-Rehman	Shaheen	Universiti Teknologi PETRONAS	Malaysia
Ahmad	Fadlallah	Arab Open University	Lebanon
Mohammed	Almulla	Kuwait University Electronics and Telecommunications Research Instititue	Kuwait
Taehong	Kim		Korea
Hussein	Al-Bahadili	University of Petra	Jordan
Amjad	Daoud	Isra University	Jordan
Hiroshi	Sugimura	Kanagawa Institute of Technology	Japan
Satoshi	Yoshida	Kagoshima University	Japan
Ashty	Aaref	Kirkuk Technical College	Iraq



A. S.	Abdallah	University of Basrah, Basrah	Iraq
Sinan	Abdul Satar	University of Technology	Iraq
Jassim	Abdul-Jabbar	University of Mosul	Iraq
Yaareb	Al-Khashab	State Commission for Dams & Reservoirs	Iraq
Abduladhem	Ali	University of Basrah	Iraq
Saad	Hasson	University of Babylon	Iraq
Ali	Hussein Hasan	Sumer University	Iraq
Mazin	Khalil	Technical College of Mosul	Iraq
Imad	Mohamad	University of Baghdad	Iraq
Mohammad	Alibakhshi-Kenari	Shahid Bahonar University of Kerman	Iran
Ghafour	Alipour	Islamic Azad University, Hashtroud Branch	Iran
MohammadReza	Effatparvar	University of Tehran, Tehran	Iran
Hojjat	Hamidi	To be Entered	Iran
Farzan	Khatib	Islamic Azad University Mashhad Branch	Iran
Habib	MotieGhader	Tehran University	Iran
Alireza	Rezvanian	Amirkabir University of Technology State Islamic University of Sultan Syarif Kasim	Iran
Edmond	Armay	Riau	Indonesia

