# TECHNICAL UNIVERSITY OF CLUJ-NAPOCA FACULTY OF ELECTRONICS, TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY

## ACTA TECHNICA NAPOCENSIS – Electronica - telecomunicatii (Electronics and Telecommunications) ISSN 1221 – 6542

#### **Local Editorial Committee**

Romulus TEREBES, Editor in Chief, Technical University of Cluj Napoca, Romania Radu ARSINTE, Senior Editor, Technical University of Cluj Napoca, Romania Virgil DOBROTĂ, Senior Editor, Technical University of Cluj Napoca, Romania Dorin PETREUŞ, Senior Editor, Technical University of Cluj Napoca, Romania Marina ȚOPA, Senior Editor, Technical University of Cluj Napoca, Romania Emanuel PUŞCHIŢĂ, Executive Editor, Technical University of Cluj Napoca, Romania Cristian FĂRCAŞ, Associate Editor, Technical University of Cluj Napoca, Romania Alin GRAMA, Associate Editor, Technical University of Cluj Napoca, Romania Doris LUPEA CSIPKES, Associate Editor, Technical University of Cluj Napoca, Romania

#### **Editorial Board**

**Aurel Vlaicu** – Technical University of Cluj Napoca, Romania

Gilbert De Mey - University of Gent, Belgium Dan Pitică - Technical University of Cluj Napoca, Romania

**José Ramón Beltrán Blázquez** - University of Zaragoza, Spain

Jan Turan – Technical University of Kosice, Slovakia Liviu Goraș – Technical University Gh. Asachi Iasi, Romania

**Valeriu Munteanu** - Technical University Gh. Asachi Iasi, Romania

Michel Riveill – University of Nice, France Ana Rusu - Royal Institute of Technology (KTH), Stockholm, Sweden

Sorin Hintea - Technical University of Cluj Napoca, Romania

Marcian Cîrstea – Anglia Ruskin University, Cambridge, UK

Corneliu Rusu – Technical University of Cluj Napoca, Romania

Alkis Hatzopoulos - University of Thessaloniki, Greece Corneliu Burileanu – Politehnica University of Bucharest, Romania

Mihai Romanca – Transilvania University of Brasov,

Romania **Radu Vasiu** – Politehnica University of Timisoara,

Romania

**Eugenio Garcia Moreno** - University of Palma de Mallorca, Spain

Ioan Naforniță - Politehnica University of Timisoara, Romania

Attila Ferencz – Dayhoun Broadcast Research Company, Seoul. Korea

Tony Ward - University of York, UK

**Cristina Morel** – Ecole Superieure d'Electronique de l'Ouest, France

**Eugen Lupu** - Technical University of Cluj Napoca, Romania

**Dan Lascu** - Politehnica University of Timisoara, Romania

### Scientific Board (\*)

Florin ALEXA
Andrei ANGHEL
Bogdan BELEAN
Vasile BOTA
Iulian BOULEANU
Nicolae CRIŞAN
Ramona GĂLĂTUŞ
Mircea GIURGIU

Mihaela GORDAN
Ioana ILEA
Raul MĂLUȚAN
Gabriel OLTEAN
Cosmin STRILEȚCHI
Lorant Andras SZOLGA
Mircea VAIDA

(\*) Note – Only members active as reviewers for the current number are listed. For full list of reviewers see the Journal website: http://users.utcluj.ro/~atn

**Publisher:** Technical University of Cluj-Napoca – Romania,

Str. Baritiu 26-28, 400027 Cluj-Napoca, Romania

© Technical University of Cluj-Napoca. Romania 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, without the prior written permission of the copyright owner. Open access content may be employed for personal use only indicating clearly the source.

No responsibility is assumed by the publisher or by the copyright owner for any injury and/or damage to persons and property as a matter of any use or operation of any methods, products, instructions or ideas contained herein.