Technical Program

Sunday, April 2

18:00 | 20:00 h  Registration at Weare Chamartin Hotel
18:30 | 20:00 h  Informal Welcoming Reception at Weare Chamartin hotel

Monday, April 3

09:00 | 09:15 h  Opening by Iberdrola
09:15 | 09:45 h  Keynote speech: Smart Meters with PLC Communications to Improve Grid Operations. Luis Molero
09:45 | 10:15 h  Keynote speech: Powerline communications for the digital grid. Txetxu Arzuaga
10:15 | 11:35 h  Session 1: PLC in Smart Grid applications
              (Chair: Mr. Peter Jensen, EDF R&D)
              10:15 h  G3-PLC Based IoT Sensor Networks for SmartGrid
                         Cedric Chauvenet and Gerard Etheve (ENEDIS, France)
                         Mohamed Sedjai (NEURON, France)
                         Manu Sharma (NEURON)

10:35 h  Grid Diagnostics: Monitoring Cable Aging Using Power Line Transmission
       Lena Förstel and Lutz Lampe (University of British Columbia, Canada)

10:55 h  Power Line Fault Detection and Localization Using High Frequency Impedance Measurement
       Federico Passerini (University of Klagenfurt, Austria)
       Andrea M Tonello (University of Klagenfurt & WiTiKee srl, Austria)

11:15 h  Sensitivity Analysis of a PLC-based Anti-Islanding Solution Using DSSS
       Anton Poluektov, Aleksei Romanenko, Antti Pinomaa and Jero Ahola
               (Lappeenranta University of Technology, Finland);
               Antti Kosonen
               (Lappeenranta University of Technology & Institute of Energy Technology, Finland)
11:55 | 13:15 h
Session 2: Impedance analysis for PLC systems
(Chair: Dr. Lutz Lampe, University of British Columbia)

11:55 h Characterization of the Input Impedance of Household Appliances in the FCC Frequency Band
Mariam Ait Ou Kharraz (EDF R&D & CentraleSupelec, France)
Cedric Lavenu, Peter Jensen and Dominique Picard (EDF R&D, France)
Mohammed Serhir
(Departement de Recherche en Electromagnetisme, Supelec, France)

12:15 h Impedance Analysis of a Power Line Distribution Network Using Short-Time Fourier Transform
Timothy Sanya and Thokozani Shongwe
(University of Johannesburg, South Africa)
Han Vinck
(University of Duisburg-Essen & University of Johannesburg, Germany)
Hendrik C Ferreira
(University of Johannesburg, South Africa)

12:35 h Impedance Matching and Channel Capacity in Power Line Communication Systems
Marco De Piante (University of Udine, Italy)
Andrea M Tonello (University of Klagenfurt & WiTiKee srl, Austria)

George Hallak (University of Applied Sciences Ruhrwest, Germany)
Gerd Bumiller
(Hochschule Ruhr West & University of Applied Sciences, Germany)
14:15 | 15:55 h
Session 3: In-Vehicle and other PLC applications
(Chair: Prof. Andrea M Tonello, University of Klagenfurt & WiTiKee srl)

14:15 h  Characterization of the Input Impedance of Household Appliances in the FCC Frequency Band
Leyna Sadamori (ETH Zurich, Switzerland)
Stephen Dominiak and Thomas Hunziker
(Lucerne University of Applied Sciences and Arts, Switzerland)

14:35 h  A Wide-Range Frequency Offset Tolerant OFDM for In-vehicle PLC System
Yoshie Kobayashi, Yoshikazu Furuta and Sungwoo Cha
(Denso Corporation, Japan)

14:55 h  Optimised PLC Power Transfer on Avionic DC Power Lines: Coupling Circuit and Lightning Protection
Mickael Brison
(Thales Avionics & Geeps, Génie Electrique et Electronique de Paris, France)
Mohamed Bensetti (Génie Electrique et Électronique de Paris)
Raul de Lacerda
(Laboratoire de Signaux et Systèmes (L2S, CNRS), CentraleSupelec, France)
Filipe Vinci Dos Santos
(Advanced Analog Design Group, CentraleSupélec, France)
Christophe Taurand (Thales Avionics, France)

15:15 h  Propagation Characteristics of Hoist Ropes for Mobile-Crane PLC
Shinji Tsuzuki and Yoshio Yamada (Ehime University, Japan)

15:35 h  Selective Transmission of Control Information Based on Channel Periodicity in PLC-based Multiple-machine Control
Shun Sawada, Kentaro Kobayashi, Hiraku Okada and Masaaki Katayama (Nagoya University, Japan)

16:10 | 17:00 h
Panel of Experts on Hybrid RF/PLC, PLC above 150 kHz and PLC in the context of Distributed Generation (DG) and Distributed Energy Resources (DER) Systems

- Mr. Ibon Arechalde (Tecnalia)
- Dr. Daniel Popa (Itron)
- Prof. Alfredo Sanz (University of Zaragoza & Atmel/Microchip)
- Mr. Bill Lichtensteiger (Landys+Gyr)
18:30 | 19:15 h  Private visit to the San Fernando Royal Academy of Fine Arts, sponsored by Iberdrola

19:30 | 22:00 h  Gala Dinner at The Westin Palace

**Tuesday, April 4**

08:30 | 09:00 h  Keynote speech: Broadband PLC communication over LV networks - Huawei PLC-IoT. Tomasz Piasecki

09:00 | 10:40 h  
**Session 4: Layer 2 and Layer 3 aspects of PLC systems**  
(Chair: Dr. Alberto Sendin, Iberdrola)

**09:00 h  Adaptive Layer Switching for PLC Networks with Repeaters**  
Stanislav Mudriievskyi (Technische Universitaet Dresden, Germany)  
Ralf J. Lehner (Technische Universität Dresden, Germany)

**09:20 h  Approaching the Limits in Routing in Power Line Communication Exploiting Network Coding**  
Levgenii Anatolijovuch Tsokalo and Bho Matthiesen  
(Technische Universität Dresden, Germany)  
Frank H.P. Fitzek  
(Technische Universität Dresden & ComNets – Communication Networks Group, Germany)

**09:40 h  CSMA/CD in PLC: Test with Full G.hn and IP/UDP Protocol Stack**  
Levgenii Anatolijovuch Tsokalo (Technische Universität Dresden, Germany)  
Gautham Prasad (University of British Columbia, Canada)  
Stanislav Mudriievskyi (Technische Universitaet Dresden, Germany)  
Ralf J. Lehner (Technische Universität Dresden, Germany)

10:00 h  **Routing in Realistic Large Smart-Grids**  
Yehuda Ben-Shimol (Ben-Gurion University of the Negev, Israel)  
Yehiel Zohar (Ben-Gurion University of the Negev & AudioCodes ltd., Israel)

10:20 h  **TCP/IP Capabilities over NB-PLC for Smart Grid Applications: Field Validation**  
Noelia Uribe Perez (CIEMAT-CEDER, Spain); Itziar Angulo (University of the Basque Country UPV/EHU & Bilbao School of Engineering, Spain)  
David De la Vega (University of the Basque Country (UPV/EHU), Spain)  
Txetxu Arzuaga (CG Automation, Spain); Alberto Sendin and Iker Urrutia (Iberdrola, Spain); Laura Marrón (ZIV CG Automation, Spain); Amaia Arrinda (University of the Basque Country (UPV/EHU), Spain)
11:00 | 13:00 h
Session 5: Narrowband PLC
(Chair: Prof. Masaaki Katayama, Nagoya University)

11:00 h A Physical Layer Model for G3-PLC Networks Simulation
Alfredo Sanz (University of Zaragoza & Atmel Spain SAU, Spain)
David Sancho and Cristian Guemes (Microchip Technology Inc., Spain)
Pedro Estopiñán (Microchip Technology Inc.)
José Antonio Cortés (Universidad de Málaga, Spain)

11:20 h An Adaptive Pursuit Strategy for Dynamic Spectrum Assignment in Narrowband PLC
Babak Nikfar (University of Duisburg-Essen, Germany)
Gerd Bumiller (Hochschule Ruhr West & University of Applied Sciences, Germany); Han Vinck (University of Duisburg-Essen & University of Johannesburg, Germany)

11:40 h Performance of PLC Communications in Frequency Bands from 150 kHz to 500 kHz
Ibon Arechalde and Ibone García-Borreguero (TECNALIA Research & Innovation & TECNALIA, Spain); Marta Castro (TECNALIA, Spain); Iker Urrutia, Ainara Fernandez and Alberto Sendin (Iberdrola, Spain)

12:00 h Implementation of Non-Orthogonal Multiplexing for Narrow Band Power Line Communications
Itziar Angulo (University of the Basque Country UPV/EHU & Bilbao School of Engineering, Spain); David De la Vega, Amaia Arrinda and Igor Fernandez Perez (University of the Basque Country (UPV/EHU), Spain); Inigo Berganza (Iberdrola SA, Spain); Asier Llano (ZIV CG Automation, Spain); Txetxu Arzuaga (ZIV LV Products CG Automation, Zamudio, Spain)

12:20 h Impact of Sampling Frequency Offset on PRIME 1.4 PLC Systems Performance
José Antonio Cortés (Universidad de Málaga, Spain); Alfredo Sanz and Pedro Estopiñán (Microchip Technology Inc., Zaragoza, Spain); Luis Díez (Universidad de Málaga); Francisco J. Cañete (Universidad de Málaga, Spain)

12:40 h Real-time Synchronization and Multiband Detection for Narrowband Power Line Communication
Babak Nikfar (Ruhr West University of Applied Sciences, Germany); Gerd Bumiller (Hochschule Ruhr West & University of Applied Sciences, Germany)
14:10 | 14:40 h

Keynote Speech by Prof. Petar Popovski (Aalborg University)
“Ultra-Reliable Low Latency Communication with Applications to Energy Grids”

14:40 | 16:20 h

Session 6: Spectral -and beyond- characteristics of PLC
(Chair: Prof. Alfredo Sanz, University of Zaragoza & Atmel/Microchip)

14:40 h Characteristics of Power Line Networks: Diversity and Interference Alignment
Lutz Lampe and Md. Jahidur Rahman (University of British Columbia, Canada); Hamidreza Ebrahimzadeh Saflar (Qualcomm Inc, USA)

15:00 h Full-Duplex Spectrum Sensing in Broadband Power Line Communications
Gautham Prasad and Lutz Lampe (University of British Columbia, Canada)

15:20 h More Robust Decode-and-Forward Relaying over Impulsive Noise Power Line Channels
Khaled M. Rabie and Bamidele Adebisi (Manchester Metropolitan University, United Kingdom); Andrea M Tonello (University of Klagenfurt & WiTiKee srl, Austria); Galymzhan Nauryzbayev (University of Manchester, United Kingdom)

15:40 h Spectral Correlation Analysis of Narrowband Power Line Noise
Cornelius Kaiser (Karlsruhe Institute of Technology (KIT), Germany); Nico Otterbach (Karlsruhe Institute of Technology, Germany); Klaus M. Dostert (Karlsruhe Institute of Technology (KIT), Germany)

16:00 h Statistical Characterization and Modelling of Impulse Noise on Indoor Narrowband PLC Environment
Fatma Rouissi (Ecole supérieure des communications de Tunis, Tunisia); Han Vinck (University of Duisburg-Essen & University of Johannesburg, Germany); Hela Gassara (Higher School of Telecommunications, Tunisia); Adel Ghazel (SUPCOM & GRESCOM, Tunisia)

16:45 | 17:45 h

Visit to Laboratories at Iberdrola Campus

18:00 | 20:00 h

IEEE ComSoc TC-PLC Meeting
**Wednesday, April 5**

**08:50 | 10:10 h**

Session 7: Broadband PLC and Visible Light Communication (Chair: Dr. Motti Mushkin, Sigma Designs Ltd.)

- **08:50 h** Analog Interference Cancellation for Full-Duplex Broadband Power Line Communications
  
  Gautham Prasad, Lutz Lampe and Sudip Shekhar  
  (University of British Columbia, Canada)

- **09:10 h** Exploring the Performance of Prototype Filters for Broadband PLC
  
  Freddy A. Pinto Benel (University of Alcalá, Spain)  
  Fernando Cruz-Roldán (Universidad Alcalá, Spain)

- **09:30 h** A Simplistic Channel Model for Cascaded PLC-VLC Systems
  
  Stephane Martin Nlom, Alain Richard Ndjiongue, Khmaies Ouahada and Hendrik C Ferreira (University of Johannesburg, South Africa);  
  Han Vinck  
  (University of Duisburg-Essen & University of Johannesburg, Germany)

- **09:50 h** Random Channel Generator of the Integrated Power Line Communication and Visible Light Communication
  
  Shuli Gao and Zhang Jian (Information Engineering University, P.R. China)  
  Jian Song and Hui Yang (Tsinghua University, P.R. China)

**10:40 | 12:00 h**

Session 8: Recent Results (Chair: Prof. Han Vinck, University of Duisburg-Essen & University of Johannesburg)

**12:00 | 12:30 h**

Adjourn
WE TURN UTILITIES INTO POSSIBILITIES

With smart grids on the rise, utilities are gearing up for a whole new ecosystem. Our information and communications technology platforms, services and tools enable you to re-invent your business and operations to empower consumers and enhance customer experience.

Welcome to the Networked Society.
A Technology & Market leader in PLC for Smart Grids

that contributes to the development of sustainable digital networks with a broad portfolio of innovative solutions

Smart Meters  DCUs  Communication equipment  Sensors, Filters & Couplers

*NEW 5CTD-E2F

Industrial three phase smart meter

Tips to enjoy Madrid these days: what to visit & where to dine

Best Shopping  Top sites  Time-honoured taverns & restaurants

Find out more at: www.ziv.es/spc
HOW CAN LOW EFFICIENCY BE ALLOWED IN AN AMI ERA?

Huawei AMI Solution makes power grid more efficient.

Traditionally electric power companies have always read meters manually. But this is prone to human error and often results in inaccurate data, long payback periods, and ineffective monitoring of line losses or electricity theft. So Huawei developed an effective AMI (Advanced Metering Infrastructure) system based on Hi-PLC technology which takes only three seconds to read a meter with a 100% daily success rate. This allows power companies to charge in real-time, detect electricity theft and conduct statistical analysis on line loss, so they can trim costs and work more efficiently.

For more information, please visit e.huawei.com

Leading New ICT The Road to digital Transformation
PRIME – a future proven global reality, beyond metering

More than Metering - PRIME fits into a telecommunications architecture that supports Low & Medium Voltage Supervision and Control, Demand Response, Integration of Renewables and Home Area Networks functionalities.

Interoperable Standard for Advanced Metering Infrastructure & Smart Grid, making the electricity networks of the future a reality.

Learn more, get in touch or join us!
www.prime-alliance.org
PRINCIPAL PATRONS

ERICSSON

ZIV

HUAWEI

REGULAR PATRONS

PRIME

ALIANCE

VENUE

Complejo de San Agustín
Km. 33,5 Carretera A-1
28750 San Agustín de Guadalix
Madrid

TECHNICAL SECRETARY

VIAJES EL CORTE INGLÉS S.A
M.I.C.E Madrid
C/ Princesa, 47 4º Planta 28008 MADRID
Tel. +34 912 042 6 00