

## Advanced PhYsical Layer Optimization Methods for energy-efficient wireless systems (PHYLOM 2010)

To be held during the 2nd Conference on Mobile Lightweight Wireless Systems (MOBILIGHT 2010).

Barcelona, Spain, 10-12 May, 2010, <http://www.mobilight.org>

The International PHYLOM 2010 Workshop on Mobilight 2010 (The 2<sup>nd</sup> International Conference on Mobile Lightweight Wireless Systems) offers an opportunity to gather research scientific works related to optimized design of energy-efficient wireless systems. A special attention is devoted to soft-computing based optimization methods such as heuristics and evolutionary algorithms, along with the main topics of interest of this Workshop.

### Scope:

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The last decade has witnessed a ever-growing demand for radio spectrum resources. Both the increasing number of users and the diverse variety of demanded services have motivated the research community (both academic and industrial) to focus their research efforts on different techniques allowing for a more efficient use of the available resources in each particular scenario (e.g. from mobile phone communications to densely-deployed sensor networks). In the past, many of the studies in this trend have concentrated on simplicity-based solutions. Following this research area, the recently coined "green technology" concept aims at optimizing the energy consumption of communication devices by attempting to provide enhanced battery autonomy at a minimum cost, not only to the operators themselves, but also to the end users. Unfortunately, most of the proposed advances to date are far from practicality.

To overcome this lack of implementable communication schemes, huge research efforts are currently devoted to balance the trade-off between performance and energy efficiency, from dynamic allocation of available resources as a function of the network conditions/status to the design of efficient network topologies, encoding, modulation, detection techniques or, in general, any other complexity-aware data processing approaches attaining near-optimal performance. Particularly, soft computing approaches, such as bio-inspired algorithms have emerged in the communications realm as a means to efficiently solve theoretically-intractable optimization issues in communications. Such algorithmic methods become even more interesting by virtue of their adaptability to highly-dynamic constraints as those shown by mobile wireless networks.

With no limitations on the topics dealing with this respect, the Workshop "PHYLOM 2010" aims at providing an interdisciplinary and cross-stage framework for gathering researchers from different fields interested in optimization techniques, specially advocated for energy-efficient communications. Notwithstanding this topic openness, PHYLOM 2010 will specially emphasize on practical Soft Computing, bio-inspired, and meta-heuristic approaches for alleviating the complexity of mobile lightweight systems. Nevertheless, research contributions submitted to the workshop can be further oriented to the following topics of interest:

- CDMA multiple user detection.

- *Synchronization methods.*
- *Joint Source/Channel Coding.*
- *Recent advances in joint sampling and compression algorithms (e.g. Compressed Sensing).*
- *Iterative (Turbo) decoding and equalization.*
- *Data processing.*
- *Energy-efficient network topologies.*
- *(Dynamic) resource allocation.*
- *Data fusion and modulation techniques.*
- *Cross-layer synergies among physical and upper (e.g. network) layers..*
- *Practical network coding schemes.*
- *Source-controlled modulation.*
- *Implementation issues.*
- *Genetic/heuristic/evolutionary methods for energy-constrained wireless networks.*
- *Soft Computing techniques in network topology problems.*
- *Artificial Intelligent methods in access control.*

*Any other topic strongly related to energy efficiency in communication networks is also welcome.*

### ***Important dates:***

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<i>Paper submission deadline</i>	<i>January 15, 2010</i>
<i>Notification of Acceptance</i>	<i>February 15, 2010</i>
<i>Final paper</i>	<i>March 15, 2010</i>

*The papers should be submitted electronically in PDF format and using the MOBILIGHT paper template, through the MOBILIGHT webpage ([www.mobilight.org/](http://www.mobilight.org/)) following the instructions given in the Submission Guidelines section.*

*Accepted papers will be published by Springer in the MOBILIGHT Conference Proceedings and made available online through Springer Lecture Notes of ICST (LNICST).*

*Note: Papers submitted to each workshop should be original and peer reviewed by the program committee and external reviewers. An accepted paper must be registered and presented at the workshop venue.*

### ***Organizing committee:***

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***Sergio Gil-Lopez*** was born in Guadalajara, Spain, in 1978. He received the B.S. degree in Physics from Universidad de La Laguna, Tenerife, Spain in 2001 although the first half of his university studies was done in the Universidad Autónoma de Madrid, Spain. His Ph.D. degree in Atmospheric Physics from Universidad de Granada (at Instituto de Astrofísica de Andalucía, CSIC) was obtained in 2006. During his Ph. D. studies he spent three months in two German researcher centers (IMK in Karlsruhe and ICFG1 in Jülich) for scientist collaboration. Currently, he is a

researcher in TECNALIA-TELECOM in the department of Wireless Communications, in Zamudio (Bizkaia) Spain. He has co-authored more than 17 international journal papers and more than 35 conference contributions. His current interests in Telecommunications deal with the treatment of NP-hard problems through the application of heuristic and evolutionary algorithms, parallel algorithms search, local search methods and multi-objetive cost functions problems, among others.

**Sancho Salcedo-Sanz** was born in Madrid, Spain, in 1974. He received the B.S. degree in physics from the Universidad Complutense de Madrid, Spain, in 1998, and the Ph.D. degree in telecommunications engineering from the Universidad Carlos III de Madrid, Spain, in 2002. He spent one year in the School of Computer Science, The University of Birmingham, U. K, as postdoctoral Research Fellow. Currently, he is an associate professor in the department of Signal Theory and Communications, Universidad de Alcalá, Spain. He has co-authored more than 80 international journal and conference papers in the field of combinatorial optimization and hybrid heuristics and Soft Computing. His current interests deal with optimization problems in telecommunications, renewable energy, economics, etc. using soft computing approaches such as genetic algorithms, hybrid algorithms and neural networks.

### **Contact information:**

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