



## CALL FOR PAPERS IEEE Sensors Journal Special Issue on Embedded Sensors for Fault Diagnosis in Electrical Wires, Interconnection Systems and Power Grids

In the era of Internet of Things (IoT), wired networks are massively hosted everywhere in many fields where the transfer of energy and information is a fundamental pillar to guarantee the good performance of a system. These wires, transmission lines, grounding systems, and connectors are critical elements whose health and integrity are essential for system operation. Yet faults and failures are inevitable. Wiring faults can lead to catastrophic problems on both economical and human levels. Accordingly, fault detection, diagnosis and location have been always substantially important for ensuring safety, security, integrity and optimal performance for applications accommodating electrical wire interconnect systems (EWISs). The emergence of sensor networks and connected objects have created the need for embedded and non-invasive fault diagnosis solutions. Many different cable diagnosis sensing techniques with different characteristics, good performance and even limitations are available to different application areas. Within this context, there is an increasing demand for designing, developing, and fabricating different types of sensors and sensing technology based on existing or innovated techniques to accurately locate upcoming defects in EWISs in an offline and online manner. Specifically, the implemented sensor systems should be able to non-destructively test and inspect without harming or degrading the performance of a system. More importantly, the continuous health monitoring of targeted EWISs is necessary at almost any stage in the life cycle of a system.

It is intended that this Special Issue of the IEEE Sensors Journal will highlight advances in the technologies proposed for the diagnosis of EWIS faults including new non-destructive sensing methods, hardware implementation of existing techniques, and the optimization of different aspects of current fault-inspecting sensors including their reliability, adaptability, validation and integration. This special issue will provide a forum with high visibility and synergy between theoretical and applied research in wire diagnostics and is expected to bring together scientists and engineers from the sensors community. Original research contributions, tutorials and review papers are sought in areas including (but not limited to):

- Advances in embedded and non-invasive fault sensing diagnosis solutions of all types for EWISs and power grids.
- Development of enhancing fault location accuracy algorithms within the physical limits of components constituting existing network monitoring sensors.
- Design, implementation, and test of novel wire fault sensing principles.
- Fundamental understanding of the electrical manifestation of EWIS faults and degradation.
- Application of specific sensor implementations for enabling simultaneous fault inspection and data communication.
- Sensors for online troubleshooting of complex wire networks.
- Distributed sensor communication strategies to cancel fault location ambiguities in branched network configurations.
- Fault characteristics extraction and detection decision-making through machine learning algorithms.

Solicited and invited papers shall undergo the standard IEEE Sensors Journal peer review process. All manuscripts must be submitted on-line, via the IEEE Manuscript Central™, see <http://mc.manuscriptcentral.com/sensors>. When submitting, please indicate in the "Manuscript Type" roll down menu, and also by e-mail to Ms. Gina Colacchio, [g.colacchio@ieee.org](mailto:g.colacchio@ieee.org), that the paper is intended for the "Embedded Sensors for Fault Diagnosis in Electrical Wires, Interconnection Systems and Power Grids" Special Issue. Authors are particularly encouraged to **suggest names of potential reviewers** for their manuscripts in the space provided for these recommendations in Manuscript Central. For manuscript preparation and submission, please follow the guidelines in the Information for Authors at the IEEE Sensors Journal web page, <http://www.ieee-sensors.org/journals>.

### Deadlines:

- Manuscript Submission deadline: December 31, 2019
- Notification of Acceptance: April 30, 2020
- Final Manuscript published in IEEE Xplore: June 30, 2020

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