

# IEEE Transactions on Vehicular Technology

*Call for papers for special section*

## **Smart Rail Mobility: Communications, Signaling and Emerging Technologies**

### Overview:

Rail transport networks are now reaching an important development stage worldwide. High-speed rail transport systems have achieved significant development in Europe and China and are beginning to become popular in many countries. On the other hand, metropolitan transport will have an increasing importance in the coming years to reduce pollution and congestion in cities.

Both metropolitan and high speed railways require the use of advanced signaling and control systems to guarantee and optimize their operation. For these reasons it is necessary to use modern communication and signaling systems for the automated control of these railways. Thus, a modern high-speed line capable of operating at 350 km / h requires the use of a communications based signaling system to guarantee its safety, allow its operation at more than 300 km / h and optimize the use of the track.

In addition, the railway infrastructures use many supplementary systems such as remote control, video surveillance, obstacle detection and operating aids that require the intensive use of information and communication technologies. In all cases the electrical and electronics equipment must have a high quality of service, reliability and availability to fulfill railway requirements.

On the other hand, users of modern transport networks demand high-capacity broadband connections with quality equivalent to that of their private homes, and rail operators want to offer supplementary entertainment services to improve the experience of their users, so 5G systems will play an important role on the railway environment in the next years.

The purpose of this special issue is to provide the academic and industrial communities an excellent venue to present the vision, research, and dedicated efforts on the key emerging technologies for smart rail mobility. The special issue seeks original contributions that address the fundamental research challenges on the related topics that can help the community to analyze the current state, identify future goals, and refine the architectures and technologies for smart rail transportation.

The topics of interest include, but are not limited to, the following:

- Railway infrastructure electrical and electronics engineering

- Rail Equipment Engineering
- Urban railways signaling systems (CBTC), communications and special equipment
- Critical communications for train control: GSM-R evolution, LTE-R, and other dedicated or non-dedicated systems
- Non critical communications: passengers' communications, railway supplementary services and others
- Safety and security related applications and systems for train control and supervision
- Smart rail mobility enabled by emergent technologies, such as mmWave and THz communications
- Global Navigation Satellite Systems (GNSS) and other solutions based on radio systems for trains positioning and location
- Signaling systems for control and autonomous railways
- Test trials and proofs of concepts of new safety systems
- Planning and development of new railway lines
- Energy Efficiency and Sustainability of public transportation
- Radar sensing for train applications

#### Manuscript Preparation and Submission:

Authors should follow the guidelines in "Information for Authors" in the IEEE Transactions on Vehicular Technology website (<http://it.is.tohoku.ac.jp/~tvt/>) under Information for Authors. Prospective authors should submit a PDF version of their complete manuscript via the journal online paper submission system at <http://mc.manuscriptcentral.com/tvt-ieee>

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#### Important Dates:

- Paper Submission: February 1<sup>st</sup>, 2018
- First Round Decisions: May 1<sup>st</sup>, 2018
- Revised Papers: August 1<sup>st</sup>, 2018
- Final Editorial Decision: October 1<sup>st</sup>, 2018
- Final Manuscripts Due: February 1<sup>st</sup>, 2018
- Publication Date: First Quarter 2019