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IEEE Journal on Selected Areas in Communications
Broadband Wireless Communications for High Speed Vehicles

With the development of mobile communication systems such as long term evolution (LTE), WiMax and International Mobile Telecommunications (IMT)-Advanced, broadband wireless multimedia services will be prevalent in the near future. Meanwhile, high speed vehicles such as airplanes and high speed trains play an increasingly important role in people's lives, since they provide a relatively stable and spacious environment for long distance travel. As a result, there will be a strong demand for broadband wireless communications (BWC) for high speed vehicles to provide information and onboard entertainment services to passengers. BWC is also needed in vehicle control systems for operational information such as fault sensor measurements and diagnostics, video surveillance, and so on. Interesting research areas and various challenges arise when designing BWC systems for high speed vehicles. For example, a new network structure is needed since a direct transmission signal between the passenger and infrastructure-base-station experiences serious deterioration when traveling through the speeding vehicle. Distributed antenna and radio over fiber can be employed for vehicle-to-infrastructure communication. Moreover, due to the lack of accurate channel information, innovative radio resource allocation schemes are also needed at the infrastructure-base-station to assign resources to high speed vehicles. The fast movement of high speed vehicles through cellular networks causes frequent handovers and drop-offs, degrading the user experience. This prompts the need for designing fast and reliable handover and random access schemes. In addition, novel physical layer techniques of BWC in high speed mobile environments need to be considered. In particular, there is a strong need to evaluate the effect of Doppler spread and revisit the noncoherent coding, modulation and MIMO schemes. Therefore, BWC for high speed vehicles is a pressing research topic that has huge applications. It is imperative to develop the key techniques enabling BWC for high speed vehicles. The goal of this issue is to bring together the most updated research contributions in this area. We are soliciting high quality, original and unpublished work in BWC for high speed vehicles, especially those pushing the envelope in terms of vehicle speed and communication bandwidth. The topics of interest include, but are not limited to:

- Novel network architecture
- Satellite communications
- Drive-through Internet
- Distributed antenna systems and radio over fiber for vehicle-to-infrastructure communications
- High speed vehicle-to-vehicle communication
- BWC for high speed vehicle control systems
- Radio resource allocation to high speed vehicles
- Fast and reliable handover and random access schemes
- Wireless channel modeling and estimation
- Effects of Doppler spread
- Modulation schemes for high speed vehicles
- Antenna array and MIMO
- Prototype and field tests

Prospective authors should prepare their manuscripts following the IEEE J-SAC format described at <http://www.jsac.ucsd.edu/Guidelines/info.html>. Authors should submit a PDF version of their complete manuscript to <http://www.edas.info>. The timetable is as follows:

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| ● Manuscript Submission Due: | May 1, 2011 |
| ● First Reviews Due: | August 1, 2011 |
| ● Second Reviews Due and Acceptance Notification: | November 1, 2011 |
| ● Final Manuscript Due: | January 1, 2012 |
| ● Publication: | 2 nd quarter 2012 |

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