Wireless Communications and Mobile Computing

Special Issue on
Convergence of Heterogeneous Wireless Networks for 5G-and-Beyond Communications: Applications, Architecture, and Resource Management

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CALL FOR PAPERS

Evolving fifth-generation-(5G)-and-beyond communication networks are envisioned to provide services with massive connectivity, ultrahigh data rate, ultralow latency, much improved security, very low energy consumption, and outstanding quality of experience (QoE). Not only will 5G-and-beyond communication systems be more advanced, but they are also expected to be more complex in comparison with legacy systems. To this end, researchers are focusing on the development of such communication systems, which are envisaged to be fully available for the users by 2020. To achieve the goals of 5G-and-beyond communication systems, convergence of the heterogeneous wireless technologies has emerged as one of the key solutions. This entails convergence of not only the radio frequency (RF) technologies, but also the optical and RF/optical wireless technologies. The optical spectrum is considered as an emerging solution for the development of future high capacity optical wireless communication (OWC) networks. It offers unique advantages, such as huge unregulated optical spectrum and inherent security. Therefore, future networks are anticipated to adopt a multitier RF/optical architecture comprising macrocells, microcells, different types of licensed small cells, optical attocells, OWC networks, and relays.

The future 5G-and-beyond systems, instead of being a single wireless access network, will be a "network of networks." The seamless integration among heterogeneous wireless, optical, and RF/optical wireless networks, demands paradigm shifts in such a way that different networks collaborate with each other so as to achieve the desired goals of the 5G-and-beyond communications. In order to attain full convergence of the heterogeneous networks, many technical issues need to be resolved.

This special issue calls for high-quality unpublished research works on recent advances related to heterogeneous networks convergence issues of the 5G-and-beyond communication systems. Contributions may present and solve open research problems and integrate efficient novel solutions, performance evaluation, and comparison with existing solutions. Theoretical as well as experimental studies for typical and newly emerging convergence technologies and use cases enabled by recent advances in wireless and/or optical networks are encouraged. High-quality review papers are also welcome.

Potential topics include but are not limited to the following:

- Recent advances in convergence networks
- Multitier heterogeneous networks convergence
- Indoor RF/optical convergence
- RF/optical convergence in V2X communications
- Wireless networks convergence in unmanned aerial vehicle (UAV)
- Load balancing using convergence networks
- Licensed/unlicensed spectrum technology convergence
- Softwarization and caching for convergence networks
- Software defined solutions for ultra-dense heterogeneous networks convergence
- Resource sharing in convergence networks
- Mobility management and handover control in convergence networks
- Detection/localization/positioning/navigation based on networks convergence
- Integration of satellite and terrestrial networks for 5G and beyond
- Interface selection in convergence networks
- Ultra-dense heterogeneous networks convergence

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Papers are published upon acceptance, regardless of the Special Issue publication date.

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