

Special Issue on
Spatial Division Multiplexing Enabled Elastic Optical Networks

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Currently, the emergence of heterogeneous and bandwidth-intensive applications, such as cloud computing and high definition video streaming, is placing a high flexibility requirement of optical networks. Enabled by orthogonal frequency division modulation (OFDM) technology and sliceable bandwidth-variable transponder, elastic optical networks (EONs) can be a promising technique for these diverse applications. However, the network traffic is expected to increase exponentially; the transmission capacity of EONs based on the single-core fiber (SCF) is approaching the physical limitation. To further increase network flexibility and capacity, the concept of EONs can be extended into the spatial domain, in which “spatial resources” can be flexibly assigned to different traffic demands. One approach for utilizing spatial resources is to deploy spatial division multiplexing enabled EONs (SDM-EONs), which can combine the advantages of high flexibility and capacity.

This special issue focuses on various technologies in SDM-EONs, including sliceable transponder supporting multicore fiber (MCF) and multimode fiber (MMF), multidimensional switching architecture, routing, spectrum, and core (mode) assignment algorithm, survivability schemes, resource virtualization, and spectrum defragmentation.

Potential topics include but are not limited to the following:

- ▶ Multidimensional optical switching architecture supporting SDM-EONs
- ▶ Sliceable transponder support MCF and MMF
- ▶ Software defined control architecture for SDM-EONs
- ▶ Routing, spectrum, and core (mode) assignment algorithm
- ▶ Traffic grooming in SDM-EONs
- ▶ Protection and resiliency schemes in SDM-EONs
- ▶ Multidimensional resource virtualization
- ▶ Spectrum defragmentation in SDM-EONs
- ▶ Performance monitoring methods in SDM-EONs

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Manuscript Due

Friday, 30 December 2016

First Round of Reviews

Friday, 24 March 2017

Publication Date

Friday, 19 May 2017