



EEI-Kolloquium

Optical Wireless Communications in the Era of 6G

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In order to comprehend the significance of optical wireless communications (OWC) in the context of 6G, it is essential to investigate the specific services in which it may deliver significant advantages. The expectations of academia and industry regarding the 6G key performance indicators (KPIs) tend to converge to an ever-increasing growth in the deployment of machine-type nodes in 2D/3D service areas, and the necessity of even higher reliability, lower latency, and higher data rates. Apart from higher data rates, lower latency, and higher number of connected devices, 6G is foreseen to be the enabler of i) energy sustainable communication, ii) security, privacy, and trustworthiness by design, and iii) networked sensing and localization. As it will be discussed in this talk, the aforementioned requirements constitute a game changer in the design of wireless communication networks, which create new opportunities for the adoption of OWC in future wireless networks. It is noted that in most applications, OWC can be seen as a complementary and not a competitive technology to RF. Consequently, the effective utilization of wireless technologies operating across multiple RF and optical spectrum bands under a cross-band design in the PHY and MAC layer becomes of paramount importance. This approach can break the frontiers of wireless communications and facilitate the achievement of the 6G KPIs. To provide further insights into these opportunities, specific examples and preliminary results will be presented, with emphasis on the created challenges and future research directions.