Recent Developments in Optical Wireless Communication Systems

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Rapid increase in the use of wireless services over the last two decades has led to the problem of the radio-frequency (RF) spectrum exhaustion. More specifically, due to this RF spectrum scarcity, additional RF bandwidth allocation, as utilized in the recent past, is not anymore a viable solution to fulfill the demand for more wireless applications and higher data rates. This tutorial goes first over the potential offered by optical wireless communications to relieve spectrum scarcity. It then explains some of the fundamentals of these systems and summarizes some of the challenges that need to be surpassed before such kind of systems can be massively deployed. Finally the talk offers an overview of some of the recent developments of optical wireless communication systems. In particular, we explain how the alignment of these systems can be improved by using an array of detectors so that they can be used as a wireless back-haul/feeder link solution for emerging and future satellite and drone communication networks.