

Seminar at FOTON Laboratory



Recent advances in high bit rate optical fiber communication systems

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Abstract

Since 2006 and the renewed interest in coherent detection associated with digital signal processing, the transported bit rate per wavelength has been increased from 40 Gb/s up to 1 Tb/s. I will present the recent advancements in high bit rate optical communication over fiber optics. Signal processing for spectrally efficient coherent systems will be presented, including phase estimation, timing estimation, forward error correction coding and nonlinear mitigation techniques which are particularly challenging for high order constellations. I will also present recent breakthrough obtained with ultrawide bandwidth semiconductor optical amplifier, as well as solutions to drastically increase the throughput over multimode fibers.

Gabriel Charlet was born in Rueil Malmaison (France) in 1976. Gabriel Charlet received an engineering degree from École Supérieure d'Optique in 1999 (Orsay, France) and a PhD in physics in 2011 from University Paris XI. He joined Alcatel Research and Innovation (now Nokia Bell Labs France) in 2000. Since then he has been working on WDM transmission systems and realized several multi-terabit/s transmission records. He also addressed the topic of advanced modulation formats. He is the first author of more than 40 papers including 10 Postdeadline papers in major conferences and more than 35 patents. Since 2008, he leads the WDM transmission group which intends to further increase total bit rate transported in an optical fiber without compromising the transmission reach. In 2007, he received the "Fabry de Gramont" award for his work on fiber optics communication. In 2010, he has been selected by the Technology Review from MIT (TR35) as one of the 35 innovators below 35 years for its work on 100-Gbit/s products using coherent detection.

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