Communications & Multimedia Lectures
Inst. Telecommunications and Multimedia Applications - Universitat Politècnica de València

Invited lecture

ALL-OPTICAL STORAGE & PROCESSING IN OPTICAL FIBRES

Prof. Luc Thévenaz
Swiss Federal Institute of Technology of Lausanne (EPFL)

Date: **September 17th, 2014** || Hour: **12:00 h**
Location: **Sala Innova, Edificio 8G, Acceso A, 4ª planta (Cubo verde).**
Universitat Politècnica de València, Camino de Vera s/n, 46022 Valencia.
http://www.upv.es/plano/plano-2d-es.html

Abstract

The generation of dynamic Bragg gratings by the interaction of 2 optical waves through stimulated Brillouin scattering has offered the possibility to implement all-optical functions that were so far impossible to realize in optical fibers. Using this feature a local grating can be placed at any position along an optical fiber and can be repositioned dynamically with a total flexibility through a purely optical interaction. This new tool has found direct applications in all-optical delay lines, demonstrating a tunable delaying capacity of more than 1 microsecond with an ideal reconfiguration time. But it turns out that its field of application is much vaster, from optical storage and analog operations on the signal (time reversal, derivative, integration, dynamic filtering,…) to distributed sensing with an extreme spatial resolution.

Short Biography

Luc Thévenaz received the M.Sc. degree and the Ph.D. degree in physics from the University of Geneva, Switzerland. In 1988 he joined the Swiss Federal Institute of Technology of Lausanne (EPFL) where he currently leads a research group involved in photonics, namely fiber optics and optical sensing. Research topics include Brillouin-scattering fiber sensors, slow & fast light, nonlinear fiber optics and laser spectroscopy in gases. He achieved with his collaborators the first experimental demonstration of optically-controlled slow & fast light in optical fibers, realized at ambient temperature and operating at any wavelength since based on stimulated Brillouin scattering. He also contributed to the development of Brillouin distributed fiber sensing by proposing innovative concepts pushing beyond barriers. He recently developed a simple technique to generate perfect Nyquist pulse to boost the data rate in already installed optical links.

During his career he stayed at Stanford University, at the Korea Advanced Institute of Science and Technology (KAIST), at Tel Aviv University and at the University of Sydney. In 2000 he co-founded the company Omnisens that is developing and commercializing advanced photonic instrumentation. He is Fellow of the Optical Society of America, Senior Member of the IEEE and Editor in 3 major scientific journals.

Contact Information: lectures@iteam.upv.es