Contribution ID: **38**   Type: **not specified**

Data readout system utilizing photonic integrated circuit

Thursday 13 October 2011 11:40 (20 minutes)

We describe a novel optical solution for data readout systems, developed within the framework of the FP7 NMP project EuroPIC (europic.jeppix.eu). In this project photonic ICs in the Indium-Phosphide-based material system are designed and fabricated. This enables the monolithic integration of active (amplifiers, photodetectors) with modulators and passive components (waveguides, splitters, filters). With these components, circuits containing laser light sources , receivers, switches and routers can be fabricated. In comparison to bulk fiber-optic or electrical equivalents, photonic integrated circuits offer advantageous performance in terms of size and weight, energy consumption, operational speed and bit-rate.

Although the specifications of the system presented here have been taken from the KM3NeT project, the proposed solution is sufficiently general to make it suitable for use in other experiments. The core of the system is a photonic integrated circuit acting as a front-end readout unit. It is an optical serializer in which the serialization of an input signal is provided by means of on-chip optical delay lines. The circuit employs electro-optic phase shifters to build amplitude modulators, power splitters for signal distribution, semiconductor optical amplifiers for signal amplification as well as on-chip reflectors. We present the concept, design and first characterization results of the fabricated devices.

Author: Mr STOPINSKI, Stanislaw (1. Technische Universiteit Eindhoven 2. Institute of Microelectronics and Optoelectronics of Warsaw University of Technology)

Co-authors: Prof. SMIT, Meint K. (Technische Universiteit Eindhoven); Prof. MALINOWSKI, Michal (Institute of Microelectronics and Optoelectronics of Warsaw University of Technology); Dr PIRAMIDOWICZ, Ryszard (Institute of Microelectronics and Optoelectronics of Warsaw University of Technology); Dr LEIJTENS, Xaveer (Technische Universiteit Eindhoven)

Presenter: Mr STOPINSKI, Stanislaw (1. Technische Universiteit Eindhoven 2. Institute of Microelectronics and Optoelectronics of Warsaw University of Technology)

Session Classification: Parallel Session 4

Track Classification: Photodetection and readout