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Advanced Fibre Bragg Grating Structures for WDM Networks

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Abstract:

Fibre Bragg gratings are the most important new fibre component since the Erbium doped fibre amplifier (EDFA); this because they give a large potential for the design of new all fibre devices. These include narrow-band filters, sensors and chirped gratings for dispersion compensation.

Through a modulation of the refractive index profile in fibre gratings a series of exciting grating structures can be obtained. Among the are multi-channel dispersion compensators, devices that represents an interesting approach to the WDM solution. The advantages of multi-channel gratings are that they exhibit characteristics similar to those of several single channel gratings but are written within a single length of fibre hence offering higher stability when packaged and potentially lower cost.

We will discuss recent advances in the area of more complex structured fibre Bragg gratings, e.g long continuously chirped fibre gratings for combined compensation of linear and 3. order dispersion to allow for exact compensation of the actual dispersion different wavelength channels experience. Furthermore square filter fibre gratings for dense WDM systems and the recently developed sinc-sampled fibre Bragg grating with identical characteristic wavelength-channels for WDM-systems will be discussed.