

## All-optical and digital non-linear compensation algorithms in flex-coherent grouped and un-grouped contiguous spectrum based networks - DTU Orbit (08/11/2017)

### All-optical and digital non-linear compensation algorithms in flex-coherent grouped and un-grouped contiguous spectrum based networks

We have evaluated that in-line non-linear compensation schemes decrease the complexity of digital backward propagation and enhance the transmission performance of 40/112/224 Gbit/s mixed line rate network. Multiple bit rates, i.e. 40/112/224 Gbit/s and modulation formats (i.e. DP-QPSK and DP-16QAM) are transmitted over 1280 km of Large  $A_{\text{eff}}$  Pure-Silica core fiber. Both grouped and un-grouped spectral allocation schemes are investigated. Optical add-drop multiplexers are used to drop the required wavelength for signal processing in the transmission link. Moreover, hybrid mid-link spectral inversion and in-line non-linear compensation methods are also analyzed. This gives us enhanced system performance and DBP step-size of 400 km in WDM 224 Gbit/s DP-16QAM system, significantly reducing the complexity of digital backward propagation.

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