

# Soliton collision-induced frequency shifts in periodic dispersion maps under third order dispersion effects

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The frequency shifts originated by inter-channel collisions of wavelength division multiplexed (WDM) dispersion managed (DM) fibre solitons can result in significant jitter in the received optical signal [1]. Thus, these frequency shifts are a potential source of system performance impairment unless a careful optimisation of the transmission link is carried out [1]. Previous analyses regarding this issue neglect the effect of third order dispersion (TOD), which can become relevant for high bit rate optical transmission systems. We present a full account of the impact of third-order dispersive effects on WDM DM soliton transmission systems based on full numerical simulations and a novel ODE model, obtained using the variational method [2], which also takes into account TOD effects.

## References

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