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## Extent of parameter variability for different pulses from a passively mode-locked fibre laser

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### Paper Abstract

This work demonstrates that fibre lasers mode-locked due to non-linear polarisation evolution (NPE) feature a very broad range of their pulse parameter variation in different generation regimes of these lasers. Both numerical modelling and experimental studies confirm that pulse parameters, such as duration and spectrum width may differ by an order of magnitude and more. This ultra-broad variability of pulse parameters in fibre lasers mode-locked due to NPE is unique and has no analogues in other mode-locked lasers. Relatively broad range of key pulse parameters of fibre lasers modelocked due to NPE requires that at least the duration and spectral width of the generated pulses be interactively controlled. For instance, adjustment of polarisation controllers in these lasers may change the pulse duration from 4 to 80 ps and the spectrum width from 0.2 to 7.4 nm.

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