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Essence of re-calibrating optical instruments: Analysis of digital delay line

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Abstract content
 (Max 300 words)

In this study a digital delay line (DDL) from Oz Optics was used. The DDL introduces a delay in optical paths between the fast and slow orthogonal polarizations by adjusting the relative travel distance of the two orthogonal modes. The insertion loss of the DDL is 1.5 dB. A Labview programme was used to write and read from the DDL. The DDL was adjusted from 0 to 60 ps and the observed first order polarization mode dispersion (FO-PMD) was measured. With 1018 random values between 0 and 60 ps, written to the DDL to adjust it, the resulting FO-PMD values give a histogram approaching the Maxwellian distribution, although not well populated on the tail. This therefore means the DDL alone can be controlled to generate a distribution approximating the Maxwellian distribution over a large sample size as would be expected theoretically.

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