

### BROADBAND FIBER CHROMATIC DISPERSION MEASUREMENT

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#### The Application

The use of FYLA supercontinuum source SCT500 makes feasible the measurement of chromatic dispersion within a large broadband. This is a significant improvement with respect the use of a discrete set of LEDs, it **saves an important amount of time and improves qualitatively the confidence in the measured values** since the whole spectral range is covered with a single experimental arrangement.

**Figure 1** gives a diagram of the Michelson interferometer used for the measurement of optical fiber chromatic dispersion. The use of FYLA SCT500 laser enables to measure from below 1000 nm up to 1750 nm using a single arrangement.

**Figure 2** shows a representative set of interferometric patterns which exhibit good contrast from short to long wavelengths. From these measurements, the group index is obtained and after one derivative, the chromatic dispersion depicted in **Figure 3** is computed.

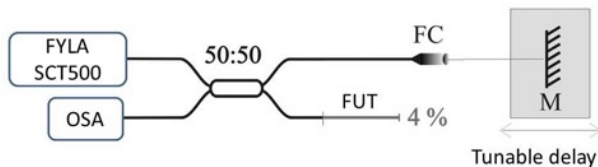


Fig. 1: Diagram of the experimental arrangement: an optical fiber based Michelson interferometer with a tunable delay line. OSA: optical spectrum analyzer; FUT: fiber under test; FC: fiber collimator; M: mirror.

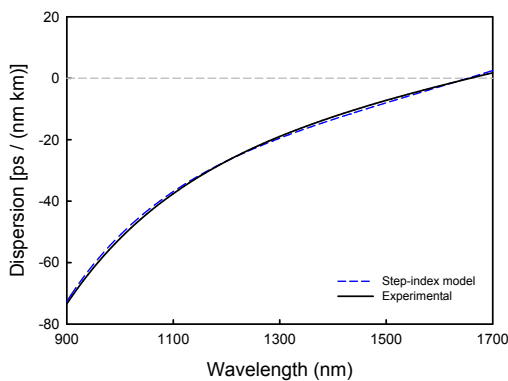


Fig. 3: Chromatic dispersion  $D$  measured with a sample of a standard fiber SM980,  $NA = 0.16$ ,  $\lambda_c = 0.9 \mu\text{m}$ : Experiment (solid line), and theory (discontinuous line).

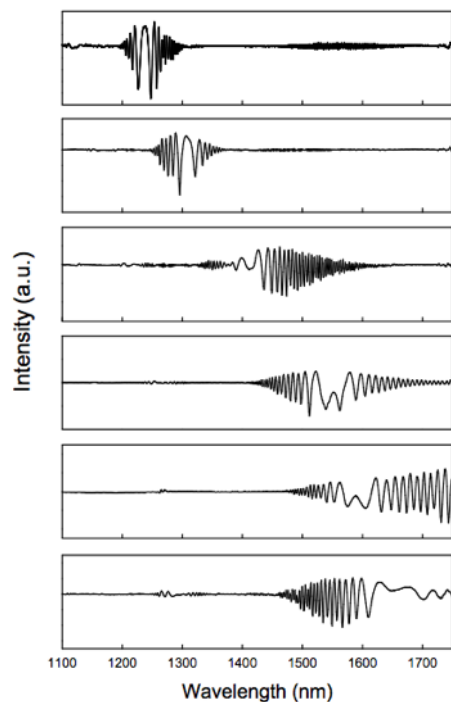


Fig.2: Set of interferometric patterns for different delays showing good visibility and covering the range 1000 - 1750 nm with a single light source.