Zero Dispersion Modeling in As2S3-Based Microstructured Fibers

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Abstract

An important step in designing a microstructured optical fiber is the computation and management of its dispersion curve. It is well-known that computing chromatic dispersion can be done analytically for certain geometries (e.g. step-index fibers), but no such analytical methods is known in the realm of microstructured optical fibers. Figure 1, Figure 2, and Figure 3 illustrate cross-sections of such fibers. Using the RF Module and LiveLink™ for MATLAB® physics, we numerically computed chromatic dispersion (Figure 4) for different types of parameterized and empirical geometries. Despite the fact that reducing the bridges thickness has a slight effect on the zero-dispersion wavelength, our results show that only the core radius of the optical fiber significantly reduces that wavelength. In brief, this poster shows how one can manage dispersion of an optical fiber by varying its geometry.

Figures used in the abstract

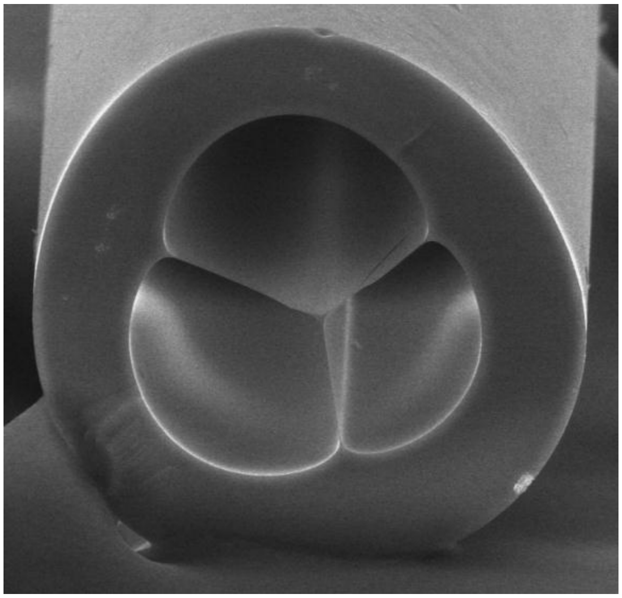

Figure 1: Cross-section of a microstructured optical fiber.

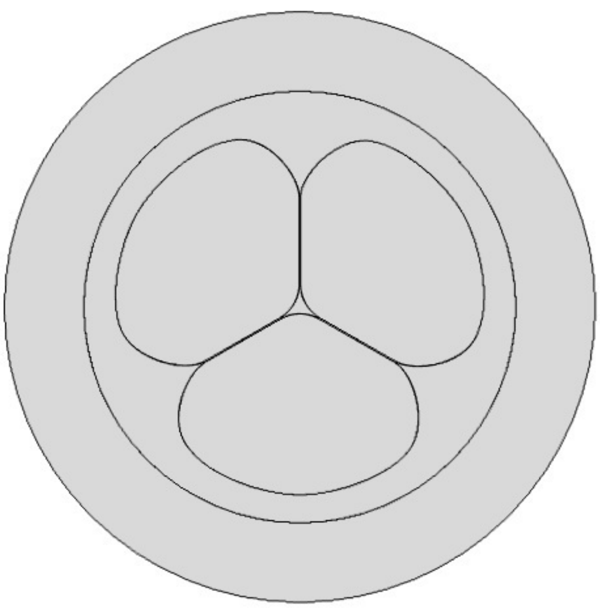

Figure 2: Cross-section of a 3-holes microstructured optical fiber.

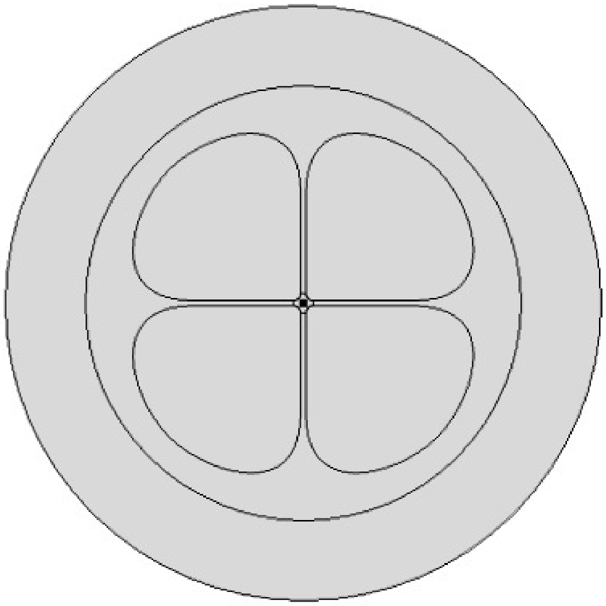

Figure 3: Cross-section of a 4-holes microstructured optical fiber.

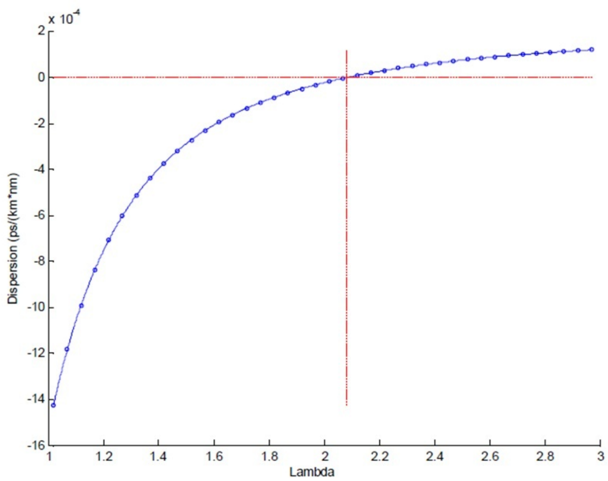

Figure 4: Relation between dispersion and wavelength.