

**Negative dispersion curves in a typical type of high negative chromatic dispersion photonic crystal fiber(PCF) have been investigated in this paper. The depended class of (PCF) has double-core structure (core- region: which has inner core and outer core) with a honeycomb photonic lattice in the cladding region. Negative dispersion curves deviated from core-region of this type of fibers will be investigated. The investigation has depended an estimation process using an approximation function to create a mathematical model that enables us to measure negative dispersion curves. The influence of inner-core parameters (dcore d1 and d2) on dispersion curves has been investigated by varying the values of these parameters. Negative dispersion curves that were introduced by a previous study using finite-difference frequency-domain (FDFD)method for this class of(PCFs) are directly included in this work in order to measure matching ratio with our results. Gaussian approximation function has been considered to estimate our mathematical model.**