All-fiber controller of radial polarization using a periodic stress

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Abstract :

Our aim is to transpose the polarization control by mechanical stress, usually applied to single-mode fibers, to the(TM_{01},TE_{01},HE^{ev}_{21},HE^{od}_{21}) annular mode family. Nevertheless, the quasi-degeneracy of these four modes makes the situation more complex than with the fundamental mode HE_{11} . We propose a simple device based on periodic perturbation and mode coupling to produce the radially polarized TM_{01} mode or at least one of the four modes at the extremity of an arbitrarily long fiber, the conversion to TM_{01} mode being achievable by classical crystalline plates.

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