

## 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  $(\text{TM}_{01}, \text{TE}_{01}, \text{HE}_{21}^{\text{ev}}, \text{HE}_{21}^{\text{od}})$  annular mode family. Nevertheless, the quasi-degeneracy of these four modes makes the situation more complex than with the fundamental mode  $\text{HE}_{11}$ . We propose a simple device based on periodic perturbation and mode coupling to produce the radially polarized  $\text{TM}_{01}$  mode or at least one of the four modes at the extremity of an arbitrarily long fiber, the conversion to  $\text{TM}_{01}$  mode being achievable by classical crystalline plates.

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