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Optical losses and wave-front distortions in the reflection of light from a photonic-crystal mirror TRAVIS MILLER, SERGIO CANTU, VOLKER QUETSCHKE, MALIK RAKHMANOV, Department of Physics, University of Texas at Brownsville, YI-CHEN SHUAI, DEYIN ZHAO, WEIDONG ZHOU, Department of Electrical and Computer Engineering, University of Texas at Arlington — The photonic crystal mirror, based on patterned silicon nanomembrane technology, promises many applications because of its very high reflectivity at 1550 nm wavelength. We determine the reflectivity and optical losses of a such a mirror using resonant Fabry-Pérot cavity and measuring its line width. We also investigate the wavefront distortions caused by the photonic crystal pattern on the mirror with a Michelson interferometer by interfering the beam reflected from the mirror with a reference beam with an ideal wavefront. In both experiments we incorporate rotational degree of freedom to determine polarization dependence of these phenomena.

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