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Temperature Dependence of Acousto-Optic Effect in a Nematic Liquid Crystal Cell STEVEN SUNDBECK, ANTHONY MALANOSKI, BRIAN WESLOWSKI, DEVANAND SHENOY, United States Naval Research Laboratory, JONATHAN SELINGER, Kent State University — The acousto-optic effect occurs in a nematic liquid crystal cell when an incident ultrasonic wave causes a rotation of the director. This effect is observable as a change in the optical transmission through a cell, and has been exploited as a means of nondestructive imaging. The sensitivity and speed of this rearrangement are dependent on the viscosity of the liquid crystal material. Because of this, the effect is sensitive to the temperature. In this work we investigate quantitatively how the acousto-optic response is affected by the temperature of the liquid crystal cell. We present the results of studies of changes to the acoustic sensitivity of the cells and changes of their dynamic responses to the introduction of the ultrasonic wave.

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