

Contrast and Finesse Enhancement in a Birefringent Filter

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Abstract :

We propose and demonstrate a novel optical implementation to simultaneously improve the contrast and increase the finesse of a classical N-stage Lyot filter. The new device based on the multiple-passage concept uses two mirrors placed at the extremities of the filter. The light beam passes through the structure back and forth and each passage has a significant influence in reducing the sidelobes and the bandwidth of the filter transmittance. We show that for a two-stage Lyot filter, the contrast is increased by 100% after each passage and the finesse is improved by over 50% after four passages and more. Such a device is highly desirable in a wide field where the filtering function requires high performances in term of contrast and finesse.

Keywords :

Birefringent filter , Lyot filter , liquid crystal.

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