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Light Guiding By Defects Into Frustrated Cholesteric Liquid Crystals

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We study the light scattering by localized quasi planar excitations of a Cholesteric Liquid Crystal known as spherulites. We quantitatively evaluate the cross section of the axis-rotation for polarized light, by taking into account the anisotropic optical properties of the medium and the peculiar shape of the excitations. Because of the complexity of the system under consideration, first we give a simplified analytical description of the spherulite. We evaluate the above mentioned scattering cross-sections in the Born approximation, by using both the analytical results and, for comparison, the numerical exact skyrmion solution for several paramenters. The effects of changing values of the
driving external static electric (or magnetic) field is also considered. Possible applications of the phenomenon are envisaged.

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