

# Critical radius of loop defects in homeotropic nematic liquid crystals

S. THIBERGE\*, C. CHEVALLARD, J. M. GILLI

Institut Non Linéaire de Nice, (U.M.R 129 C.N.R.S.) Université de Nice  
Sophia-Antipolis, 1361, route des Lucioles, 06560 Valbonne, France

and A. BUKA

Research Institute for Solid State Physics of the Hungarian Academy of Sciences,  
H-1525 Budapest, P.O. Box 49, Hungary

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We describe an experimental situation with a looped line defect in nematic liquid crystals observed by polarizing optical microscopy. We measured the critical size of the loop below which it spontaneously shrinks and transforms into a point defect. The experiment was done with 5CB which gives rise to twist disclinations as do most of the usual nematics. For this kind of disclination an in-plane force due to the boundary conditions acts on the line and influences the critical radius. We have constructed a model which is in good agreement with experimental measurements and deduced the line tension of the disclination.