A NEW METHOD FOR LIQUID CRYSTALS
BASED ON THE SPIN EQUATION

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Abstract. This paper is concerned with the dynamics of liquid crystals with a non-symmetric form of the pressure tensor. The formulation uses the classical spin equation, where the spin depends on the director d of the local embedded crystals. Thus the mass-momentum equations are completed by the spin equation, and since we consider the temperature dependent case, in addition an energy equation is necessary. The temperature dependent free energy is given as usual by the entropy through $f = \varepsilon - \theta\eta$ and in the stationary case this reduces to well known results. But the main thing is that we apply the entropy principle and use an equivalent formulation of the fact that the entropy is an objective scalar. This way we prove our general theorem by showing that the entropy production is positiv. As application of this theorems we show that important results of H. Grad, Ericksen & Leslie, I. Müller, and Chandrasekhar are correct.