

1014-35-1125

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East Lansing, MI 48824. *The Existence of Global Solution of Variational Equations.*

We analyze the existence of smooth global solutions of a variational nonlinear equation which models orientation wave in a massive nematic liquid crystal director field. We prove that the equation has the global solutions with high space dimensions and smooth solutions develop singularities in one dimension. (Received September 27, 2005)