

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Effect of Magnetic Field on Electronic Nematic Order in a Bilayer System: Application to $\text{Sr}_3\text{Ru}_2\text{O}_7$ CHRISTOPH PUETTER, HYEON-JIN DOH, HAE-YOUNG KEE, Department of Physics, University of Toronto, Toronto, Ontario, Canada M5S 1A7 — Recent experiments on the bilayer compound $\text{Sr}_3\text{Ru}_2\text{O}_7$ suggest the existence of an electronic liquid-crystal phase. A possible explanation for the unusual behavior observed in this material is provided by an electronic nematic theory. Within this framework, a bilayer system undergoes multiple phase transitions and exhibits strong transport anisotropy. The model also incorporates an external in-plane magnetic field to study the effect on metamagnetic transitions and anisotropic transport. Details of our numerical calculations will be presented.

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Date submitted: 01 Dec 2006

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