

Abstract Submitted  
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**Time Reversal Symmetry Breaking in 2D Lattice Model** WEI LIU,  
ALEXANDER PUNNOOSE, City College of New York — We use magnetic group  
as a tool to classify the possible spontaneous time-reversal symmetry breaking states  
in 2D electronic systems. We study the leading order fluctuations of the order pa-  
rameter with discrete symmetry. The method is applied to the study of Topological  
Mott insulator phase in Graphene and orbital loop currents in CuO planes.

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