

Abstract Submitted  
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**Two dimensional disorder in black phosphorus and layered monochalcogenides** SALVADOR BARRAZA-LOPEZ, MEHRSHAD MEHBOUDI, PRADEEP KUMAR, EDMUND O. HARRISS, HUGH O. H. CHURCHILL, ALEX M. DORIO, University of Arkansas, WENJUAN ZHU, AREND VAN DER ZANDE, University of Illinois, ALEJANDRO A. PACHECO SANJUAN, Universidad del Norte — The degeneracies of the structural ground state of materials with a layered orthorhombic structure such as black phosphorus and layered monochalcogenides GeS, GeSe, SnS, and SnSe, lead to an order/disorder transition in two dimensions at finite temperature. This transition has consequences on applications based on these materials requiring a crystalline two-dimensional structure. Details including a Potts model that explains the two-dimensional transition, among other results, will be given in this talk. References: M. Mehboudi, A.M. Dorio, W. Zhu, A. van der Zande, H.O.H. Churchill, A.A. Pacheco Sanjuan, E.O.H. Harris, P. Kumar, and S. Barraza-Lopez. arXiv:1510.09153.

Salvador Barraza-Lopez  
University of Arkansas

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