

Abstract Submitted  
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**Superfluid transition in a correlated dislocation network<sup>1</sup>**

HANNES MEIER, MATS WALLIN, KTH, Stockholm, Sweden, STEPHEN TELTEL, University of Rochester — The search for a supersolid state in He-4 solids has motivated theoretical investigations of 3D connected superfluid dislocation networks. It has usually been assumed that a 3DXY universality class controls the superfluid transition in such systems since the random distance between intersections of the dislocation lines carrying superfluidity appears as uncorrelated disorder which is irrelevant at the 3DXY transition. We consider the possibility that the random disorder instead has long range correlations, and investigate several different models of correlated defects. Analytic arguments and extensive Monte Carlo simulations demonstrate new disordered universality classes for the superfluid transition with a smooth temperature dependence at the transition of the superfluid density and heat capacity.

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Mats Wallin  
KTH, Stockholm, Sweden

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