

Abstract Submitted
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Modulated magnetism in the ferromagnet PrPtAl : clear experimental evidence of the 'order by disorder' theory. J.-PH. REID, Univ. of St. Andrews, CHRIS O'NEILL, Univ. of Edinburgh, ALEX WALKER, Univ. of St. Andrews, CALUM LITHGOW, GINO ABDUL-JABBAR, Univ. of Edinburgh, EDWARD YELLAND, Univ of St Andrews, DMITRY A. SOKOLOV, ANDREW D. HUXLEY, Univ. of Edinburgh — The ferromagnet PrPtAl is unlike any other. At the phase boundary between paramagnetism and ferromagnetism the fluctuations of the order parameter are so strong that energetically favourable phases of novel modulated magnetism emerge. In fact, its the lack of order (the disorder) that is pivotal to promote a new order. This mechanism is referred to as order by disorder and is the centre of numerous theoretical studies [2,3]. In this seminar, following an introduction on the topic of ferromagnetic materials, I will show how we can use both electrical and thermal conductivities to learn everything about these phases of modulated magnetism and to validate the predictions of the order by disorder theory. [1] G. Abdul-Jabbar et al. Nat. Phys. 11, 321327 (2015). [2] G. J. Conduit et al. Phys. Rev. Lett. 103, 207201 (2009). [3] U. Karahasanovic et al. Phys. Rev. B 85, 165111 (2012).

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