On the nature of isotherms at first order phase transitions for classical lattice models

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Abstract. Two main results are presented in this paper: Isakov's Theorem about the impossibility of an analytic continuation of the pressure at a first order phase transition point and Friedli's work about the restoration of the analytic continuation of the pressure in the van der Waals limit at such a transition point. An exposition of Pirogov-Sinai theory for models with two periodic ground-states is given in section section 3, which can be read independently.