

Contribution Title: ISING MODELS, UNIVERSALITY AND THE NON-RENORMALIZATION OF THE QUANTUM ANOMALIES

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We present a proof of the universality conjecture for a large class of weakly perturbed planar coupled Ising models or quantum spin chains. Such a conjecture states that the critical indices and some of the thermodynamic quantities, though model-dependent, verify a set of general universal relations. The validity of the conjecture can be checked in certain special integrable cases but its validity in non solvable models was up to now unproven. The analysis is based on the representation in terms of Grassman integrals of the spin observables, combined with the Renormalization Group methods developed in Constructive Quantum Field Theory. The universal relations follow from the hidden local Gauge invariance and the validity of the Adler-Bardeen property of non-renormalization of the quantum anomalies in the asymptotic Ward Identities. Gauge invariance is exact only in the scaling limit, but the lattice corrections can be rigorously taken into account.