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Universality of modulation length exponents SAURISH CHAKRABARTY, ALEXANDER SEIDEL, ZOHAR NUSSINOV, Department of Physics, Washington University in St Louis — We study systems (classical or quantum) with general pairwise interactions. Our prime interest is in frustrated spin systems. First, we focus on systems with a crossover temperature T^* across which the correlation function changes from exhibiting commensurate to incommensurate modulations. We report on a *new exponent*, ν_L, characterizing the universal nature of this crossover. Near the crossover, the characteristic wave-vector k on the incommensurate side differs from that on the commensurate side, q by $|k-q| \propto |T-T^*|^{\nu_L}$. We find, in general, that $\nu_L = 1/2$, or in some special cases, other rational numbers. We discuss applications to the axial next nearest neighbor Ising model, Fermi systems (with application to the metal to band insulator transition) and Bose systems. Second, we obtain a universal form of the high temperature correlation function in general systems. From this, we show the existence of a diverging correlation length in the presence of long range interactions. Such a correlation length tends to the screening length in the presence of screening. We also find a way of obtaining the pairwise interaction potentials in the high temperature phase from the correlation functions.

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