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**Vollhardt "invariant" and phase transition in the helical itinerant magnet MnSi** SERGEI STISHOV, ALLA PETROVA, Russian Acad of Sci-Troitsk — We argue that rounded "hills" or "valleys" demonstrated by the heat capacity, thermal expansion coefficient, and elastic module are indications of a smeared second order phase transition, which is flattened and spread out by the application of a magnetic field. As a result, some of the curves which display a temperature dependence of the corresponding quantities cross almost at a single point. Thus, the Vollhardt crossing point should not be identified with any specific energy scale. The smeared phase transition in MnSi preceding the helical first order transition most probably corresponds to the planar ferromagnetic ordering, with a small or negligible correlation between planes. At lower temperatures, the system of ferromagnetic planes becomes correlated, acquiring a helical twist.

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