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Non-traditional phase transitions in liquid crystals

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Borrowed from textbooks on thermodynamics and statistical physics wisdom gives a classification of phase transitions into two types: continuous or second-order phase transitions, where the latent heat is zero, and the 1-st order phase transitions, where it is not zero. In some more advanced modern textbooks and monographs referred to another standing alone (and in the world of two-dimensional systems) Berezinskii - Kosterlitz - Thouless transitions having some features of the 1-st and 2-nd order transitions. In this work one example from the realm of liquid crystals (smectic A - Hexatic smectic phase transition) of non-traditional thermodynamic behavior is discussed. We propose and theoretically describe mechanisms for such non-conventional behavior, and new predictions following from the consideration.

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