

Singularities and scaling invariants of susceptibility in biasing field near critical point: application to uniaxial ferroelectrics.

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The general shape of the temperature dependence of the static susceptibility in a biasing field conjugated to the order parameter is analysed with the use of the simplest equation of state compatible with the Widom and Griffiths scaling hypothesis. The corresponding curves are demonstrated to show from two to four inflection points, from which a discontinuous inflection point is found to occur exactly at the critical point whenever the critical exponent of susceptibility differs from one: $\gamma \neq 1$. The unique inflection point occurring below the temperature of the maximum of the susceptibility in the case of the classical critical exponents, i.e. in the mean field theory, is also shown to be strictly independent of the biasing field. New scaling invariants related to the inflection points are found and their analytical expressions are given for the considered equation of state. The usefulness of the theoretical results to the analysis of experimental data is discussed

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