

The Nature of Liquid-Gas Asymmetry in Fluids

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We have examined experimental and theoretical consequences of "complete scaling", originally formulated by Fisher and coworkers [1], to explain the nature of liquid-gas asymmetry in fluids. By combining accurate liquid-vapor coexistence and heat capacity data, we have unambiguously demonstrated experimental and simulation evidence of "complete scaling". We have also developed a method for obtaining two scaling-field coefficients, responsible for two different sources of liquid-gas asymmetry, from meanfield ("classical") equations of state. Since liquid-gas asymmetry in near-critical fluids is completely determined by the Ising critical exponents, there is no need for a special renormalization-group theoretical treatment of the asymmetric fluid criticality.

[1] Fisher *et al. Phys. Rev. Lett.* **85**, 696 (2000).