On the significance of the second partial derivatives of thermodynamic quantities at the critical point

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Abstract

The second partial derivative of specific volume on pressure have been analytically studied with the help of the Van der Waals equation of state. It has been shown that this derivative at the critical point of the liquid-gas phase transition does not have a definite value. It has also been shown that the second partial derivative of the specific volume on pressure is not a continuous function and therefore it is not a function of the state.