Role of Associated Pairs in the Gas-Liquid Transition of 1:1 Electrolyte Primitive Models

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The role that the ionic association plays in the gas-liquid transition of primitive models of electrolytes is still subject of controversy. Even when the most sophisticated theoretical approaches include the ionic association into pairs, the transition is still considered to be driven by the free ions. However, recent theoretical and computer simulation studies show that the transition can be driven by the associated pairs. We present a formalism that naturally introduces an exact description of the ionic fluids as a mixture of associated pairs and free ions, and showing that the thermodynamics of the ionic fluid at low temperatures is dominated by the ionic association.