



ID de Contribution: 15

Type: Non spécifié

Thermal instability, evaporation, and thermodynamics of one-dimensional liquids in weakly interacting Bose-Bose mixtures. Important perspectives for impurities. (ONLINE presentation)

mercredi 8 septembre 2021 14:00 (1 heure)

We study the low-temperature thermodynamics of weakly interacting uniform liquids in one-dimensional attractive Bose-Bose mixtures. The Bogoliubov approach is used to simultaneously describe quantum and thermal fluctuations. First, we investigate in detail two different thermal mechanisms driving the liquid-to-gas transition, the dynamical instability, and the evaporation, and we draw the phase diagram. Then, we compute the main thermodynamic quantities of the liquid, such as the chemical potential, the Tan's contact, the adiabatic sound velocity, and the specific heat at constant volume. The strong dependence of the thermodynamic quantities on the temperature may be used as a precise temperature probe for experiments on quantum liquids.

The liquid-to-gas transition should also occur by reducing the concentration of one component in the mixture. By reaching the highly unbalanced mixture limit of our theory, one can explore the Bose polaron problem with attractive impurity-bath interaction, at finite temperature and in one spatial dimension where quantum and thermal fluctuations, which are both consistently taken into account in our theory, are strongly enhanced.

Orateur: DE ROSI, Giulia (UPC –Universitat Politècnica de Catalunya)