

Y junction and its related problems in one-dimensional Bose liquid

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We study the dynamical nature of interacting ultracold Bose atoms (Bose liquid) filled in the Y-shaped potential. We find that the scattering of an incident density packet at the junction is analogous to the Andreev reflection at the metal-superconductor interface, although no fermion is contained in this system. We also discuss the nature of the Bose liquid in ring type interferometers with an effective magnetic flux. We find that the transport of Bose liquids is completely insensitive to the magnetic flux in contrast to the Aharonov-Bohm effect in a single particle motion in same geometry.