
Homework 1

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PROBLEM 1

Show that multiparticle nonrelativistic quantum can be recovered from QFT. Namely, define

$$H = \int d^3x a(x) \left(\frac{-\hbar^2}{2m} \nabla^2 + U(x) \right) a^\dagger(x)$$

and

$$|\psi, t\rangle = \int d^3x_1 \dots d^3x_n \psi(x_1, \dots, x_n; t) a^\dagger(x_1) \dots a^\dagger(x_n) |0\rangle$$