

# Enhanced Binding for the semi-relativistic Nelson Model

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We consider a system of semi-relativistic  $N$  particles interacting with a scalar bose field under influences of an external potential  $V$ . The  $N$ -particles do not directly interact each other but interact through the bose field. The effective potential of the particles is derived by a scaling limit of the total Hamiltonian. We assume that  $V$  is sufficiently small such that the semi-relativistic Schrödinger operator  $\sqrt{-\Delta + m^2} - m + V(x)$  has no negative energy ground state. Hence the total system has no ground state if there is no particle-boson interaction. We establish the ground state of the total system by using an information of the effective potential. This is joint work with Fumio Hiroshima(Kyushu university).