

Abstract Submitted
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Superfluid equation of state of dilute composite bosons or how to include 3 and 4-body problems in the *many* body problem XAVIER LEYRONAS, ROLAND COMBESCOT — We show how the 3 and 4-body problems emerge in the BEC limit of the BEC-BCS crossover, where we treat explicitly dimers as made of two fermions. We give the argument leading, at zero temperature, to the calculation of the equation of state. We find that, when expanding the chemical potential in powers of the density n up to the Lee-Huang-Yang order, proportional to $n^{3/2}$, the result is identical to the one of elementary bosons in terms of the dimer-dimer scattering length a_M , the composite nature of the dimers appearing only in the next order term proportional to n^2 .

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