Palestini, Pieri, and Strinati Reply: In the preceding Comment, Chien, Guo, and Levin [1] raise some criticisms to the treatment of the compressibility of a strongly interacting Fermi gas made in Ref. [2] for the normal phase above the critical temperature T_c, on the basis of a presumed violation of conservation principles which would result in the appearance of a Meissner effect above T_c.

Our reply is that no such inconsistency occurs, because a Ward identity (which is at the basis of conservation principles) was actually utilized for the calculation of the compressibility, as it was explicitly stated in the Supplemental Material to Ref. [2] and will be detailed again below [see points (i) and (ii)]. In addition, we shall take advantage of this Reply to emphasize once again the *key physical argument* identified in Ref. [2] to understand how the problem of a diverging compressibility within the t-matrix approach is overcome by going beyond this approach [see points (iii)–(ix) below].

(i) In Ref. [2], the compressibility was explicitly calculated in terms of the numerical derivative $\partial n/\partial \mu$, as stated in the left column of page 2 of the associated Supplemental Material. In this way, the Ward identity that connects single- and two-particle fermionic Green's functions [3] was satisfied by construction, as also stated in the left column of page 2 of the associated Supplemental Material. (ii) In this context, the function $n(\mu)$, from which $\partial n/\partial \mu$ has been calculated numerically, was reported in Eq. (9) of the Supplemental Material to Ref. [2], where the fermionic self-energy Σ_P was taken from Ref. [4]. (iii) Even though our concern about the calculation of the compressibility could have been halted at this level, owing especially to the quite good agreement with the recent experimental data, in Ref. [2] care was taken to understand the physical origin underlying this agreement. (iv) It was thus emphasized in Ref. [2] that the t-matrix approach, which has been successfully used in the past to describe a number of physical quantities for an attractive Fermi gas across the Bardeen-Cooper-Schrieffer (BCS) to Bose-Einstein condensation (BEC) crossover, fails when applied to the calculation of the compressibility while approaching T_c from above at any coupling, leading to a diverging compressibility. (v) In Ref. [2], this failure was ascribed to the fact that, in the BEC limit, the t-matrix reduces to the theory of noninteracting pointlike bosons, which is known to share a similar diverging compressibility. (vi) It was then recognized in Ref. [2] that for pointlike bosons this divergence can be eliminated by including the interaction between bosons. For this system, a consistency between the static limit of the compressibility and the thermodynamic derivative $\partial n/\partial \mu$ can be readily verified at the level of the Hartree-Fock/random phase approximation with exchange (RPAE). (vii) It was further recognized in Ref. [2] that the RPAE response for pointlike bosons can be mapped onto the series of Aslamazov-Larkin (AL) and twisted AL diagrams for composite bosons in the BEC limit, which were explicitly drawn in Fig. 1 of Ref. [2]. (Incidentally, the symmetry factors 2^n mentioned by Chien, Guo, and Levin in their Comment [1] appear explicitly within the Hartree-Fock/RPAE approach to the density response function of pointlike bosons, where they are required for consistency with the associated Ward identity for the compressibility, since the chemical potential in this case has a factor of 2 coming from the sum of Hartree and Fock bosonic self-energy diagrams). (viii) Accordingly, the *physical argument* made in Ref. [2] was that, going beyond the t-matrix approach by including diagrams that contain the residual interaction between composite bosons in the BEC limit, could heal the divergence of the compressibility along the whole BCS-BEC crossover. The numerical calculation made in Ref. [2] for the compressibility in terms of the derivative $\partial n/\partial \mu$ definitely contains this series of AL and twisted AL diagrams. (ix) To the numerical calculation for the compressibility made in Ref. [2] in terms of the derivative $\partial n/\partial \mu$, there correspond, however, *also* additional diagrams associated with combinations of Maki-Thompson diagrams with AL and twisted AL diagrams. These diagrams derive from the three types of effective two-particle interactions for the response functions that were shown in Fig. S2 of the associated Supplemental Material. These additional diagrams were not explicitly reported in Ref. [2] because they appear not to be essential for eliminating the divergence of the compressibility and further vanish in the BEC limit where the above physical argument was identified.

For all these reasons, no inconsistencies occur in the treatment made in Ref. [2] between the single-particle self-energy and the static response function associated with the compressibility.

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Received 15 June 2012; published 12 September 2012
DOI: 10.1103/PhysRevLett.109.118902
PACS numbers: 03.75.Ss, 03.75.Hh, 74.20.−z, 74.40.−n

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