

## Generalized susceptibilities for a perfect quantum gas

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## Generalized susceptibilities for a perfect quantum gas

Abstract: The system we consider here is a charged fermions gas in the effective mass approximation, and in grand-canonical conditions. We assume that the particles are confined in a three dimensional cubic box  $\Lambda$  with side  $L \geq 1$ , and subjected to a constant magnetic field of intensity  $B \geq 0$ . Define the grand canonical generalized susceptibilities  $\chi_L^N, N \geq 1$ , as successive partial derivatives with respect to  $B$  of the grand canonical pressure  $P_L$ . Denote by  $P_\infty$  the thermodynamic limit of  $P_L$ . Our main result is that  $\chi_L^N$  admit as thermodynamic limit the corresponding partial derivatives with respect to  $B$  of  $P_\infty$ . In this paper we only give the main steps of the proofs, technical details will be given elsewhere.