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# Normal phase of the unitary Fermi gas: High-order Feynman diagrams versus ultracold atom experiments

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## Résumé

We perform a systematic and controlled summation of the series of Feynman diagrams for a fermionic many-body problem in a non-perturbative regime, using a Bold Diagrammatic Monte Carlo method. Specifically, we study the unitary gas in the normal unpolarised phase, and compute the equation of state, the "contact", and the momentum distribution. Recent measurements on ultracold atoms at a Feshbach resonance allow direct and precise comparison with experimental data.

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