

## **A progenitor fermi surface tracking algorithm**

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An algorithm involving the use of photoemission derived spectral functions is described. It is obtained by combining a set of non-perturbative identities for the fermion number in an interacting fermi system, derived under specific conditions. This algorithm enables the tracking of the progenitor fermi surface of free fermions, as they suffer severe renormalization and quantum phase transitions, usually involving a breakdown of perturbation theory.

[1] "Fermi Surface Volume of Interacting Systems", B. Sriram Shastry, arXiv:1808.00405v3, Annals of Physics 405, 155 (2019). <https://doi.org/10.1016/j.aop.2019.03.016>.