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The 0.7 anomaly in quantum point contacts: a scattering approach[1] CAIO LEWENKOPF, PAULO BONFIM, Universidade do Estado do Rio de Janeiro, Brazil — The conductance steps observed in the electronic transport through quantum point contacts (QPCs) became a paradigm of the Landauer conductance formula. For this reason, the ubiquitous experimental observation of the 0.7 anomaly in the first conductance step of QPCs, that defied the single-particle scenario, raised a lot of attention. The most successful theoretical explanation of this transport feature is in terms of Kondo physics: It builds on an Anderson-like model, whose parameters, namely, the resonance position, its couplings to the reservoirs and the charging energy are adjusted to give meaningful results. Starting from a scattering approach, that uses the Feshbach projection formalism, we construct a single-particle basis that allows us to directly calculate the resonance position and its coupling to left and right reservoirs. We then include an electron-eletron interaction term and proceed as standard. This approach unveils a novel interpretation for the underlying physics of the 0.7 anomaly.

[1]CNPq and FAPERJ (Brazil)

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