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Lifetimes of the Fermi polaron and molecule at finite momentum from fRG

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We study theoretically the lifetimes of the attractive and the repulsive Fermi Polaron and the molecule at finite momentum in both two and three dimensions. To this end we developed a new technique that allows for the computation of Green's functions in the whole complex frequency plane using exact analytical continuation within the functional renormalization group. While conventional approaches like the NSCT method cannot determine these lifetimes, we are able to find the momentum dependent lifetime at different interaction strengths of both the attractive and repulsive polaron as well as the molecule. In our talk we discuss our findings and talk about possible experiments which could be conducted.

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