

# Properties of scattering matrix with long-range perturbations.

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**Abstract:** We consider scattering theory for Schrödinger-type operators with long-range perturbations. It is well-known that it is necessary to introduce a modified free propagation to define wave operators/scattering operator.

We show the scattering matrix is a Fourier integral operator with the phase function corresponding to the (modified) classical scattering map. We also show the spectrum of the scattering matrix can be dense point and absolutely continuous, whereas for the short-range case it is well-known that the spectrum is always discrete with the essential spectrum only at 1.