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## Data-driven dark matter-electron scattering rates from the dielectric function

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We present a fully data-driven approach for determining the spin-independent dark matter-electron scattering rate in any detector material. The scattering matrix element is completely determined by the complex dielectric function, which automatically contains all many-body effects and is directly measurable with X-ray scattering and electron energy-loss spectroscopy. We comment on the implications of this formalism for current and planned experiments, emphasizing how general properties of the dielectric function may help to identify optimal detector materials such as heavy-fermion compounds.

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