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Simple dynamic exchange-correlation kernel of the uniform electron gas[1] LUCIAN CONSTANTIN, J.M. PITARKE, Tulane University — We propose a simple dynamic exchange-correlation kernel of the uniform electron gas. We model the reduction of the electron-electron interaction due to short-range exchange-correlation effects by introducing a frequency-dependent error-function effective interaction. By imposing the fulfillment of the compresibility and the third-frequency-moment sum rules, as well as the correct asymptotic behavior at large wave vectors, we find an accurate and simple dynamic exchange-correlation kernel that accurately reproduces the wave-vector analysis and the imaginary-frequency analysis of the correlation energy of the uniform electron gas.

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