Atomic correlation energy differences by means of a polarization potential

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Correlation energy differences have been evaluated using an empirical polarization potential for the two-, three-, and four-electron atom series. In contrast to local-density approximations the Z dependency of the correlation energies has been well reproduced. Moreover, the quantitative agreement with experimental values is surprisingly good. Deviations are smaller than 0.01 hartree. © 1988 The American Physical Society.