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**Interference in Electron-Molecule Elastic Scattering.** ARKADIY BALTENKOV, Arifov Institute of Ion-Plasma and Laser Technologies, STEVEN MANSON, Georgia State University, ALFRED MSEZANE, Clark Atlanta University — General formulas describing the multiple elastic scattering of electron by polyatomic molecules have been derived within the framework of the model of non-overlapping atomic potentials [1]. In this model the molecular continuum wave functions have been represented as a plane wave plus a linear combination of the Green's functions for free motion and the derivatives of these functions. Built in such a way, the wave functions far from the target have a form of $N$ spherical waves emitted by $N$ atomic spheres. These waves interfere as in the case of the Young's double slits experiment. The interference of spherical waves manifests itself as diffraction oscillations in the differential and total cross sections for elastic electron scattering. The amplitude of electron scattering by a molecule is defined by the phase shifts for each of the atoms forming the target and its geometry. The numerical calculation of the scattering amplitude in closed form (rather than in the form of $S$-matrix expansion) is reduced to solving a system of algebraic equations. The derived general formulas have been applied to different carbon molecules, both for fixed-in-space and randomly oriented molecules. The work of [1], which included only $s$- and $p$-waves, has been extended to include partial wave of any angular momentum. This work was supported by the Uzbek Foundation Award OT-Φ2-46 (ASB) and U.S. DOE, Basic Energy Sciences, Office of Energy Research (AZM and STM). [1] A.S. Baltenkov, S.T. Manson and A.Z. Msezane, J. Phys. B **51**, 205101 (2018).

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