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Ionization and Spin Exchange Processes with Spin-Polarized Metastable Helium Atoms in Gas Discharge Plasma VICTOR KARTOSHKIN, GEORGE KLEMENTIEV, Ioffe Physico-Technical Institute of the Russian Academy of Sciences — At the interaction between the spin-polarized excited atom and paramagnetic ground state atom or molecule in gas discharge, elastic and inelastic processes can take place simultaneously. It means that besides the chemo-ionization of the atom or molecule at the expense of atom's excitation energy (inelastic process), an exchange of electrons is possible without a great depolarization (elastic process, or spin exchange). In such a case these two processes give rise to a remarkable spin polarization transfer between colliding particles. Influencing each other, these two processes result in a change in the spin exchange and frequency shift cross section values.

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