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Angular distributions of secondary electrons in fast particle-atom scattering MIRON YA. AMUSIA, Racah Institute of Physics, Hebrew University, Jerusalem, Israel and Ioffe Physico-Technical Institute, St. Petersburg, Russia, LARISSA V. CHERNYSHEVA, Ioffe Physico-Technical institute, EUGENE LIVERTS, Racah Institute of Physics — We present the angular distribution of electrons knocked out from an atom in a fast charge particle collision at small momentum transfer. It is determined not only by dipole but also by quadrupole transitions, the contribution of which can be considerably enhanced as compared to the case of photoionization. There the non-dipole parameters are suppressed as compared to the dipole ones by the parameter$\omega R/c \ll 1$, where ω is the photon energy, R is the ionized shell radius and $c$is the speed of light. This suppression in fast electron-atom collisions can be considerably reduced: the expansion parameter $\omega R/v \ll 1$ is much bigger than in photoionization, since the speed of the incoming electron v is much smaller than c. It is essential that the ionizing field in collision process is longitudinal, while in photoionization – transversal. We present results for outer s-subshells of noble gas atoms He, Ar and Xe. Even for very small transferred momentum q, i.e. in the so-called optical limit, the deviation from photoionization case is prominent. Results of calculations and formula used can be found in http://arxiv.org/abs/1012.5465v1 (arXiv:1012.5465v1)

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