Some properties of energetic electron diffusion through the velocity space

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The diffusion coefficients in a velocity space, which correspond to scattering of energetic electrons on main slow waves (Alfven waves, fast magnetosonic waves, whistler and electrostatic oscillations near the lower hybrid resonance) are studied. Calculations for an isotropic wave power spectral density in the radiation belts are executed. We compared the diffusion coefficient dependence on the angular spectrum as a result of comparison between one-dimensional and isotropic spectral power densities of the waves. The obtained conclusions are useful for more precise calculation of the particle life time in the radiation belts for different energy channels. The conditions of applicability of the earlier known calculations, obtained in the approximation of the narrow angular spectrum of the waves, are defined more concretely. The obtained results to determine natural limitations on the possible properties of the energetic particle distribution function.