Numerical Calculations of Diffusion Coefficients for Plasmas Confined by Magnetic Fields ALHASHMI ALABYAD BILAL, Plasma Physics Department, TNRC, MOHAMED MANSOR, Physics Department, Alfatah University, MAULUD ELAHARSH, Physics Department, 7th April University, NAJEEB KHALIFA, Plasma Physics Department, TNRC — The collisions of electrons with other particles and with each other is an important process in plasma in general in connection with excitation, ionization, diffusion, heat and electrical conduction to name a few. In this work, the position of the guiding center is calculated from the numerical solution of the equations of motion of two electrons interacting under the effect of magnetic field. Particle orbits for various types of particles will be shown and some of the peculiarities of the scattering processes will be emphasized. Results of calculations of difusion coefficients for electrons of plasma confined in a magnetic field will be presented. The diffusion coefficients for electrons are calculated as the average of the square of the random translations of the guiding centers during collisions. The diffusion rates calculated in this way are orders of magnitude higher than their corresponding classical values which raises a question about the classical theory.

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