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On energy, helicity and force characteristics of the generated magnetotail/solar streamer described in kinetic approach.

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We study in terms of the Vlasov kinetic approach the classical problem of the "blow up" by the solar wind flow of the 3D magnetosphere tail/solar streamer out of the originating magnetic source formed by magnetic dipole and magnetic toroid. The magnetic source we characterize by dimensionless parameter which is ratio of integral currents in the toroid and dipole components and by perpendicular orientation angle of the dipole and toroid moments. The incoming flow is a hot collisionless plasma with maxwellian distribution function. We get a global 3D magnetic configuration of the system. New plasma scaling parameters are magnetic Debye scale and anomalous skin scale. These values are connected with diamagnetic properties of the flowing plasma and with resistive properties of plasma provided by Landau damping effects on the mode of inductive e.m. fields. The source scale together with plasma scales form set of new kinetic dimensionless plasma parameters: magnetosphere quality, magnetic Debye value and magnetic Reynolds number. We calculated integral quadratic values of the system which characterize energy, force and helicity characteristics of the formed 3D e.m. plasma configuration. They are functions of the introduced dimensionless parameters. We get analytical expressions for integral Ohm resistance of the flowing collisionless plasma represented like a load for a generator, calculated electromotive force of this inductive generator and friction force of the magnetic source due to inductive interaction with flowing hot collisionless plasma. We get finally expressions for inductance values of the magnetosphere tail/coronal streamer characterizing accumulated magnetic energy in the system.