ON LARGE-SCALE MHD MOVEMENTS IN A PLASMA COLUMN DUE TO A LOCALIZED DRIFT INSTABILITY [[1]](#footnote-1)\*)

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This report deals with oscillations of a long thin plasma column with finite conductivity. A cylindrical model is used,  Helical perturbations are considered, here  is the column radius. For a high conductivity along the magnetic field, when  and  is the longitudinal component of dielectric tensor, a large-scale () perturbation is close to ideal MHD, except the vicinity of the resonance surface  at which the wave number  vanishes (provided such a surface exists). In this movement, the vector-potential is equal to  and it is created by the currentsThe assumption is maid that, for *m* and under consideration, an ideal in the entire plasma volume MHD instability and tearing instability are absent. At the same time we suppose that there is a small-scale "electrostatic" drift-type instability localized in the thin layer near  . The unequality  takes place for this mode, here  is a characteristic radial wave number. If there are currents  in the localized mode these currents can create a forced large-scale MHD perturbation with the same helicity. We describe the rise of such a perturbation in the case when the small-scale instability is due to localized gradient of ion temperature [1,2].

References

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2. K. Miyamoto, *Fundamentals of Plasma Physics and Controlled Fusion*, University of Tokyo, 2001.

1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVIII/Mu/ru/BR-Arsenin.docx) [↑](#footnote-ref-1)