INVESTIGATION OF EQUILIBRIUM PLASMA CONFIGURATIONS IN TOROIDAL TRAPS WITH A Z-ELONGATED CROSS SECTION BASED ON THE MOROZOV-SOLOVYOV EQUATIONS [[1]](#footnote-1)\*)

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Stationary and two-dimensional (in a cylindrical coordinate system) configurations of quasi-neutral plasma are studied numerically on the basis of the Morozov-Solovyov equations [1,2,3,4]. These equations are a general system of hydrodynamic equations of a two-component ideal plasma written in a special form for the case of stationary flow. A plasma resting condition is added for the trap. The basic equations are written in terms of two functions - the magnetic flux function and the total current function 

 

Here is the energy integral (Bernoulli integral) of the electrons,  is the integral of the angular momentum of the electrons, and  is the entropy of the electrons. When switching to the natural system of units of measurement, it turns out that a small parameter  is not included in the task at all. The value characterizing the influence of the finite mass of electrons is the parameter , where  are the characteristic values of density and linear size. This report will present the results of numerical solution of the corresponding boundary value problem for traps with parameters close to those of JET or JT installations. Special attention is paid to the choice of , , . Experimental results are often presented for the cross - section  . As an example, we will give some results of solving two-dimensional problems - the distribution of the some quantities along the radius in this section.

Distributions of  are presented .

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References

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLIX/Mu/ru/BZ-Savel%27ev.docx) [↑](#footnote-ref-1)