Numerical simulation OF DENSE PLASMA FLOW SLOWDOWN/deceleration IN BACKGROUND GAS [[1]](#footnote-1)\*)

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Early, we proposed the model of propagation of axial flow in a plasma focus facility. The model was based on “magnetic piston” phenomenon [1]. But for now, we have found that this assumption cannot provide satisfactory simulation of experiments. We assume that the model should be improved with high-velocity plasma clot launched by z-pinch. We tried to use experimental measurements [2] for clear initial state of plasma flow. It resulted in model of fast magnetized plasma clot that decelerating by gas sweeping. Also the other side of issue – flow’s magnetic propagation was analyzed.

The model is raw, but it matches experiments enough - it represents axis flow dynamics of PF-3 and KPF-4 facilities that were built with different electrode shapes. Model matches to experiments better than exponential velocity approximation, used it the article [2]. Our calculation results in less initial velocity of the clot – compared to exponential approximation. Further we will use this conclusion for numerical simulation of the axial flow.

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References

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2. Krauz, V.I., Vojtenko, D.A., Mitrofanov, K.N., Problems of Atomic Science and Technology, Series Thermonuclear Fusion, 2015, v.38, №2, pp. 19-31.
1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVII/It/ru/DA-Suslin.docx) [↑](#footnote-ref-1)