

Abstract Submitted
for the DFD09 Meeting of
The American Physical Society

The refraction phenomena in the shock wave dispersion on plasma inhomogeneities ANNA MARKHOTOK, MMA, SVETOZAR POPOVIC, ODU — Recently we introduced a new mechanism of the shock wave (SW) dispersion on a boundary [1] and then employed it to control the structure of a SW front as it interacts with plasma. Now we consider same effect but under specific conditions on the interface with weak gradients at the interface, but stronger in the bulk. These conditions appear more realistic for most applications, and more important, the SW dispersion in this case becomes stronger. We derive all relations using the approach similar to [1]. Then the model applied to calculate the structure of the SW front dispersed on a plasma sphere numerically and compared with the existing experiments. The strength of the effect is demonstrated by comparing results of calculation for different conditions on the interface. Comparative calculations show significant difference in the shock front shapes and they are in complete agreement with the experiments. More results are underway which can contribute to understanding of basic phenomena in weakly ionized gases, combustion, and shock dynamics on the interfaces.

[1] A. Markhotok, S. Popovic, L. Vuskovic, *Phys. of Plasmas J.* **15**, 3 (2008).

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Date submitted: 22 Jun 2009

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