

Plasma Diagnostics by Stimulated Resonance Rotation of Polarization Plane of Probe Signal

K B OGANESYAN^{1,2}, A H GEVORGYAN³, AND P KOPCANSKY²

¹*Theory Department, AI Alikhanyan National Science Laboratory (former Yerevan Physics Institute), Yerevan, Armenia*

²*Institute of Experimental Physics SAS, Košice, Slovakia*

³*Institute of High Technologies and Advanced Materials, Far Eastern Federal University, Vladivostok, Russia*
Contact Email: oganesyan@saske.sk

The polarization plane stimulated rotation angle of probe signal in the intense laser field in plasma is calculated. The estimates of the residual gas local density in a cesium plasma based on the effects of Faraday, Cotton-Mouton and stimulated rotation of probe signal in the intense laser field have been found. A brief theory of resonant change in the plane of polarization of a probe signal under the action of an intense pulse is presented. It is shown, that the rotation in the medium has a complex structure.

Acknowledgements: This research is supported by the EU NextGenerationEU through the Recovery and Resilience plan for Slovakia under the project No. 09103-03-V01-00052, by VEGA project 2/0043/21 and by the Foundation for the Advancement of Theoretical Physics and Mathematics ‘BASIS’ [Grant No. 21-1-1-6-1]