Course title: Laser Plasma Diagnostics

Status: elecgtive

ECTS: 15

Requirements: Master in Plasma physics

Learning objectives

The knowledge about plasma diagnostics methods based on laser application.

Learning outcomes

Abilities:

- General: Ability for professional and scientific activities in the field of plasma diagnostics using lasers.

- Specific: Ability for setting up and performing the experiments. Application of different methods based on laser methods for plasma diagnostic purposes – plasma electron density and temperature determination. Ability to discuss the results obtained. Inclusion in scientific and industrial processes based on plasma technologies.

Syllabus

Interferometers. Refractive index of plasma. Plasma caracterization by measuring refractive index. Schliren method. Shadow Method. Plasma interferometry using fotoelectric determination.
Laser interferometers. Investigation of magnetoactive plasmas utilizing rotation of polarizing plane. Plasma parameters determination from interferograms. Holographic interferometry. Plasma investigation from light scatering. Interaction between electromagnetic vawes and plasma. Technigue of scattering experiments. Detection of scattered spectra.

Literature

1. L. T. Larêkina, V. S. Ïngelêšt, Optiåeskaà diagnostika plazmì, Izd-vo “Ilim”, Frunze (1987).
2. L. A. Dušin i O. S. Pavliåenko, Isledovanie plazmì s pomoöu lazerov
3. W. Lochte-Holtgreven, Ed., Plasma diagnostic, North-Holland, Amsterdam (1968).

Weekly teaching load:	Theory: 4	Student research work: 6