PLASMA SCHOOL
Bad Honnef

XXII[st] International School on Low Temperature Plasma Physics: Basics and Applications

Experimental Workshop II: Spectroscopy

How to get plasma parameters? What do we see?

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Many aspects of plasma diagnostics are going to be addressed during the School, underlining the suitability and usefulness of each method to get insight into one or another plasma parameter such as density, temperature, velocity, energy distribution function of different species. However, things may be slightly different when one faces the actual plasma and real experimental tools, and questions often arise: how does it work? What has to be taken care of? Are all the required conditions fulfilled to get reliable results? Etc...

In the Experimental Workshop I two maybe three so called active investigation tools are covered. The objective of this experimental workshop is to give the attendees a first insight into the technical aspects including some difficulties and pitfalls that may be encountered when using optical emission spectroscopy (OES) as plasma diagnostics tool. For this we will go down to the basics and we will

- setup our own - very simple - spectrographs. For this we will have to discuss the influences of the dispersing element. Answer questions: What are these slits for? Do we have to think about them?
- Try to wavelength calibrate our systems
- Compare our home-made to modern so called USB spectrographs
- Interpret the emission spectra of some selected light sources by use of analysing software.
- (maybe) apply our diagnostics to the DC plasma reactor of the alternative experimental workshop.

A brief reminder of the requirements for OES and the consequences for the actual instruments will be given first, together with the underlying hypothesis and limitations. Attendees will be given the opportunity to setup and compare the two basic types of spectrographs and apply these systems.

The workshop is limited to 12 students, preferable in the first year of a PhD thesis.