

Argon plasma analysis using Langmuir probes

Tom Vadot Matteo Veneziano

EPFL Section of Physics

November 29, 2024

Defining plasma

Maybe split in the middle between quasineutral and collective behaviour?

"A *quasineutral* gas of charged and neutral particles which exhibit *collective* behaviour"¹

Quasineutrality: even though the particles making up a plasma consist of free electrons and ions, their overall charge densities cancel each other in equilibrium²

Collective behaviour: macroscopic fields dominate over short-lived microscopic fluctuations

¹F. F. Chen, ***Introduction to plasma physics and controlled fusion: volume 1: plasma physics***, 2nd ed. rev. of : "Introduction to plasma physics", 1974 (Springer, New York, 2006).

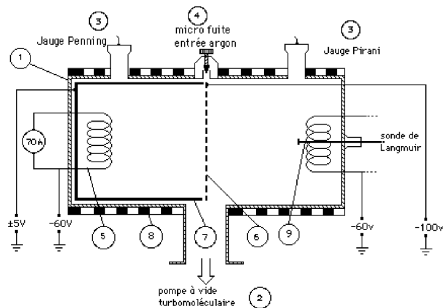
²P. Gibbon, "**Introduction to plasma physics**", CERN Yellow Reports, Publisher: CERN, Geneva, 10.5170/CERN-2016-001.51 (2016).

Langmuir probes

The I - V characteristic curve

Ion acoustic waves

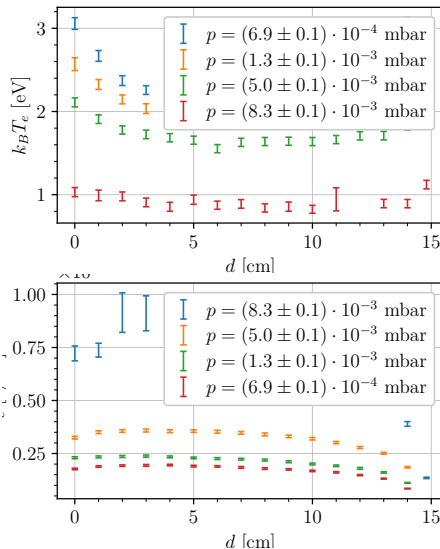
Experimental setup



(Variation avec position, différentes pressions)

Mise en page en dernier, avant écrire les phrases

[Observations]



Some other stuff about Plasma

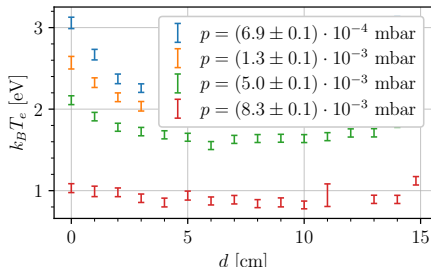
This is column one with 75% text width.

This is column two with
25% text width.

Some other stuff about Plasma

Now with lines!

- Mmmh yes the plasma is made of plasma
- Second smart remark
- Third smart remark



On the thermal properties of plasma

Caution!

Plasma is hot

Overlays in Beamer

The easiest way is to use the stop command

Overlays in Beamer

The easiest way is to use the stop command
Like this

Overlays in Beamer

The easiest way is to use the stop command

Like this

There are other very customisable ways but we won't need them.