

# Argon plasma analysis using Langmuir probes

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# Defining plasma

Maybe split in the middle between quasineutral and collective behaviour?

"A *quasineutral* gas of charged and neutral particles which exhibit *collective* behaviour"<sup>1</sup>

Quasineutrality: even though the particles making up a plasma consist of free electrons and ions, their overall charge densities cancel each other in equilibrium<sup>2</sup>

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

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<sup>1</sup>F. 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).

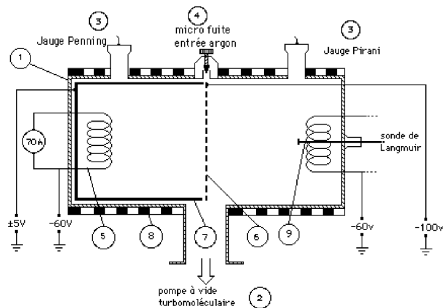
<sup>2</sup>P. Gibbon, "**Introduction to plasma physics**", CERN Yellow Reports, Publisher: CERN, Geneva, 10.5170/CERN-2016-001.51 (2016).

# Langmuir probes

# The $I$ - $V$ characteristic curve

# Ion acoustic waves

# Experimental setup

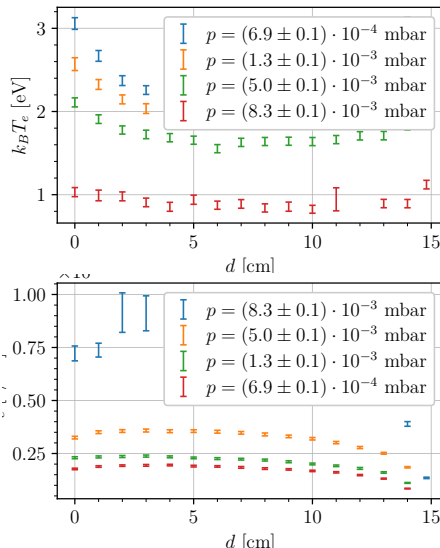


# (Variation avec position, différentes pressions)

Mise en page en dernier, avant écrire les phrases

## [Observations]

- Close to heating elements  $\rightarrow$  higher  $e^-$  temperature
- Higher pressure decreases temperature
- Maximal density for distances 3-6 cm from heating element (or is it completely arbitrary?)



# Some other stuff about Plasma

This is column one with 75% text width.

This is column two with  
25% text width.



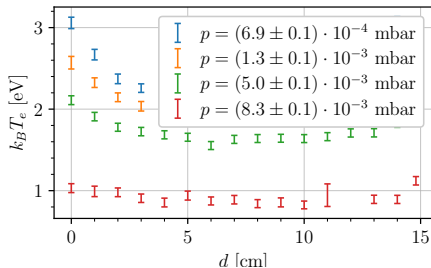
# Some other stuff about Plasma

Now with lines!

Mmmh yes the plasma is  
made of plasma

It do be warm tho (and cold  
too how cool is that?)

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

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Like this

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

# 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.  
wait i can animate anything here

# 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.

wait i can animate anything here

you just lost the game