Chamber Dark Current as a function of Temperature

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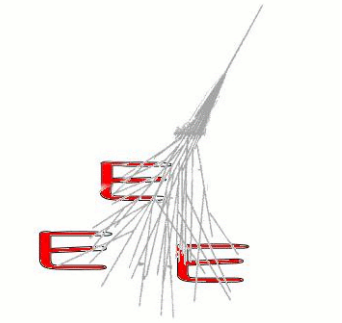


GB coordinates

Latitude: 45°04’13” Nord
Longitude: 7°41’12” Est

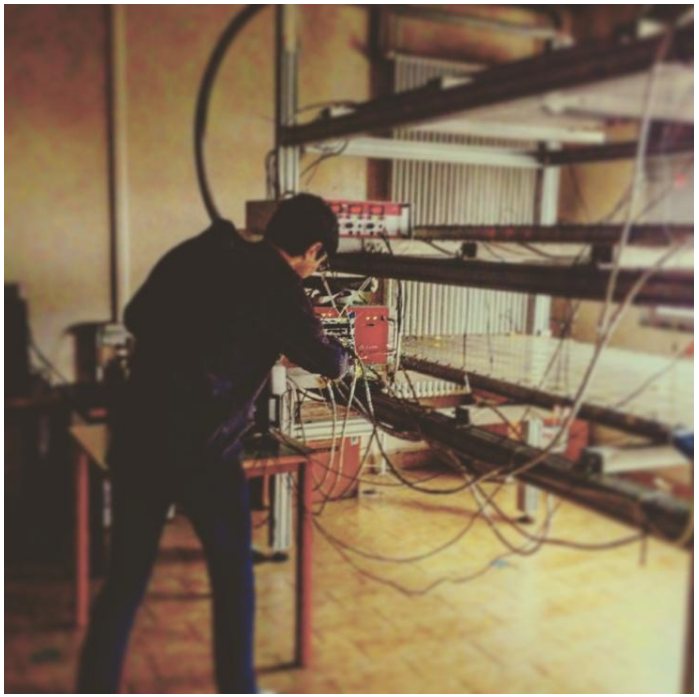
Nord GB direction:

$$\beta = (22° \mp 1°)$$

2016/2017 Data Run

Since october 2016, two third grade classes have monitored the Telescope.

Everyday we take data at 9:00, 11:00 and 13:00, including voltage values of chambers, gas status and meteorological condition.



CNAF, we have a problem

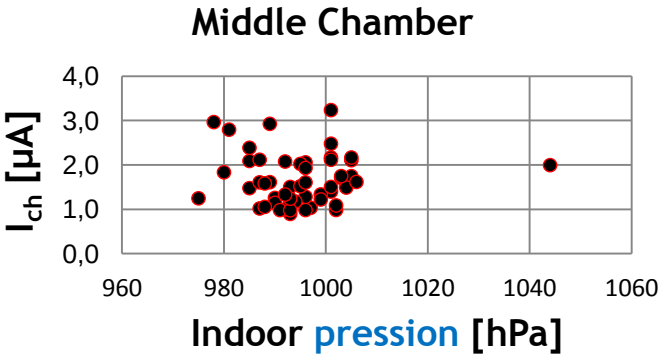
In 1 year the temperature expected range, in the EEE lab, is over 20°C.

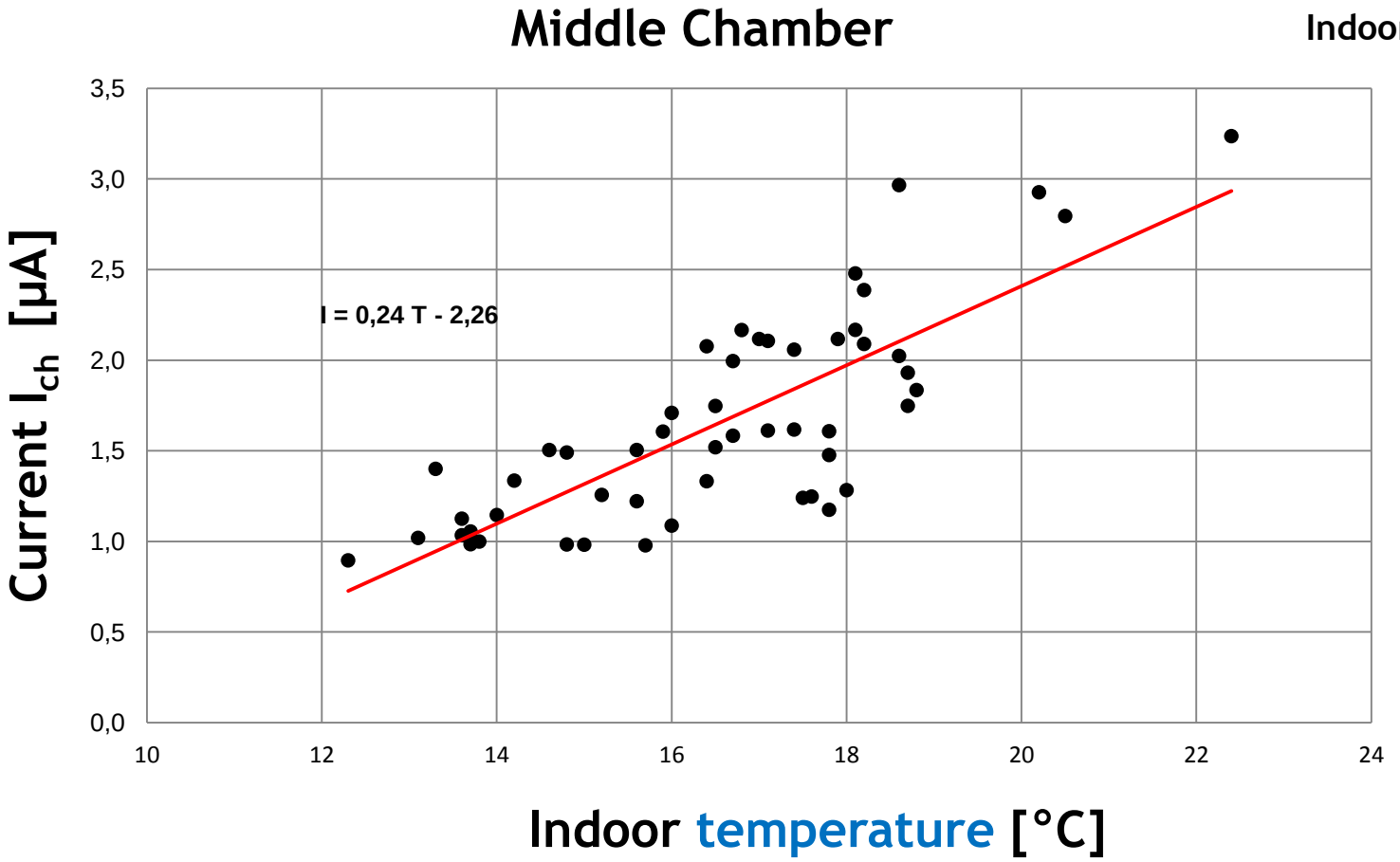
- How do our detector is conditioned by temperature variations?

- We took data from November to February, at the same time (11.00 am). During this period the low voltage supply of the chambers was constant (4.6V).

I_{ch} vs T

Below we plot the current in function of indoor temperature, only for one chamber.
However, every chamber has a similar plot.



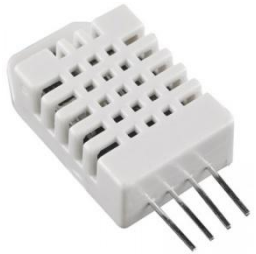


Outcome of the analysis

There seems to be a correlation between temperature in the room and chamber current.

We want to further investigate the issue.

We built a new weather station with an Arduino board. This station has temperature, pressure and humidity sensors with better precision and resolution.



In order to reduce temperature variations a conditioning system will be soon installed.

Further investigations could lead to the evaluation of the correlation coefficient and to the design of a strategy to minimize and stabilise dark currents.

The End

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