IPT 2015 – France – Opponent

Denis Merigoux

Problem 1
Thermal clock

Construct the most precise clock that uses a periodic change of temperature of one of its components as a timer.

It should use a continuous heat supply and the working substance may be air or water in any form.

The device should not have any moving parts.

Reporter : strengths

- Very nice setup
- Build a counter
- Explained the physical principles behind his setup
- Empirical optimization of the stack position
- Study the importance of other main parameters

Reporter : weaknesses

- Did not explained the principles behind the precision of a clock
- Not measured the temperature
- Optimisation : stability of the heat supply, optimal frequency, optimal duration to measure
- Theoretical study: optimal frequency of the setup? Optimal measured duration?
- How is the precision of the counter?

Discussion points

Experiment:

Counter:

- What is the principle causing the uncertainty?
- How to improve it experimentally?

Same for the tubes

Theory:

Dependancies of the relative error (=precision)?