Report of Setup at UVic

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SuperB Meeting Perugia

DCH Session II

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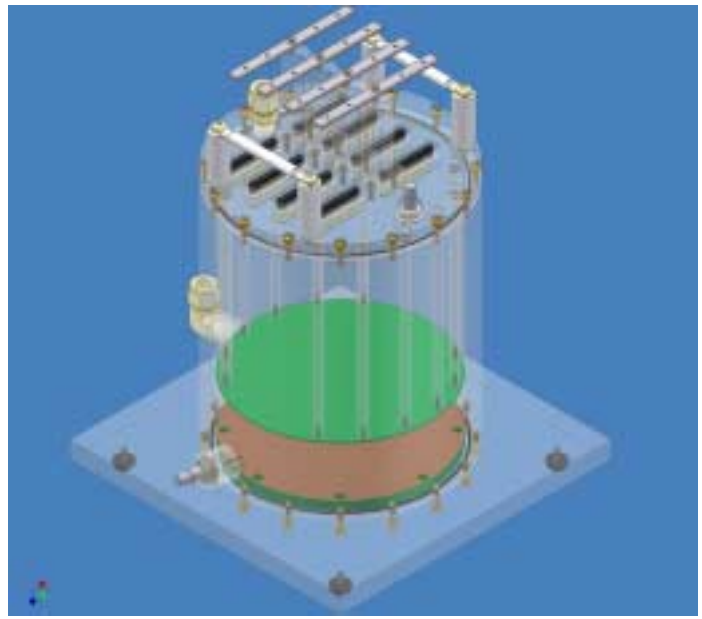
UVic

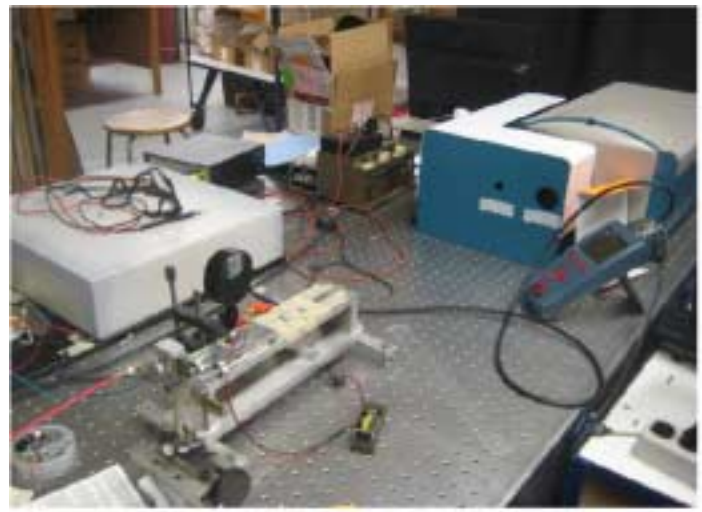
Commissioning of Mini-TPC

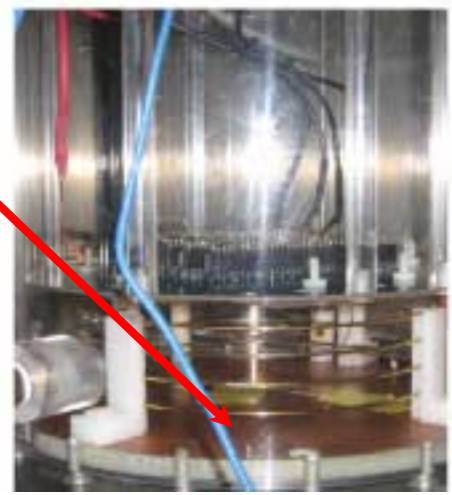
- Mini-TPC to validate magboltz calculations of gas properties
- Goal is to measure drift velocity dependence on electric field to better than few %



Commissioning of Mini-TPC

- Mini-TPC with micromegas readout
- Al dots on Cu cathode and 266nm laser produce electrons at fixed distance
- validate magboltz calculations of gas properties
- Goal is to measure drift velocity dependence on electric field to better than few %



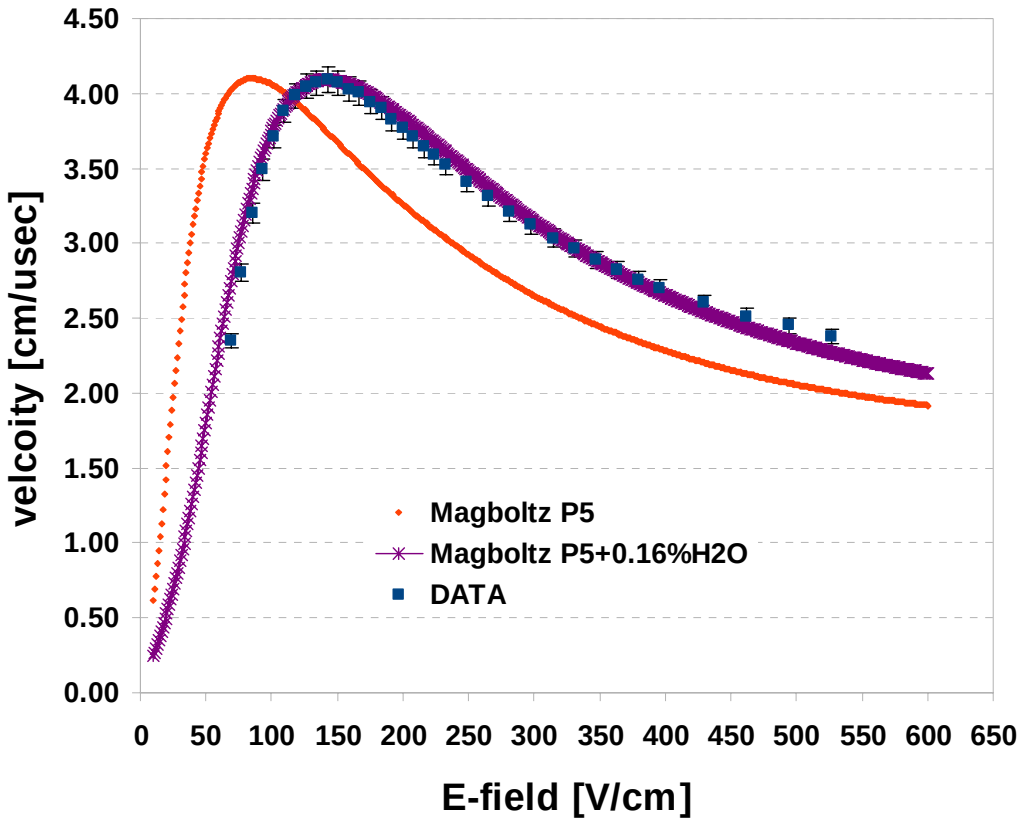


Commissioning of Mini-TPC

- Commission with Ar-based gases: exploit the Ramsauer peak in the drift velocity vs E_{drift} to develop understanding of systematic effects.
- Start with P5: Ar-Methane 95%/5%
  - find H_2O at 0.16% level causes upward shift in Ramsauer peak. Need to enclose the device in a sealed box flushed with dry Ar.
- Then use Ar/Isobutane 90%/10%

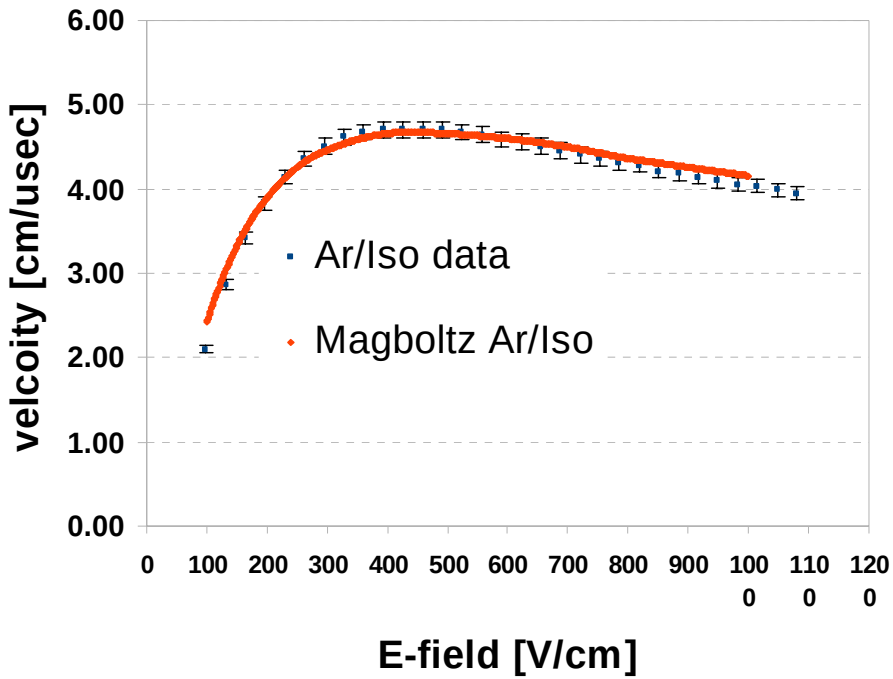
P5 Commissioning of Mini-TPC

estimate correlated error of 2%



Ar / Isobutane (90%/10%) Commissioning of Mini-TPC

estimate correlated error of 2%



Status of Commissioning

- installing a gas analysis system (RGA based on mass spectrometer): expect it to be operational by end of this week
- studies of diffusion are in progress
  - still need to introduce a E_{drift}-dependent correction to t_0 because of diffusion effects
- studies of gain in progress: idea is to use variance vs mean method and measure gain relative to P5 or Argon/Isobutane
- Expect delivery of He based gases with CF_4 and Isobutane by end of next week

Summary

- Commissioning of mini-TPC with P5 and Ar/Isobutane proceeding well.
- Drift velocity dependence on E-field in these Argon-based gases is reproduced within expected tolerances
- Analysis of data to extract gas gain and diffusion properties in progress
- He based gas studies to commence as soon as gas is delivered.
- A second device is being constructed to study magboltz modelling of clusters
- Intent is to complete these studies by early autumn