

# **SETUP AT UVic**

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**SuperB Meeting ORSAY LAL  
DCH Parallel Session  
16 February 2009**

# Sample of IPP Canada Gas Tracking Projects

- Long track record of contributions to projects stretching back to e.g. LASS, TRIUMF TPC, ARGUS, OPAL, etc
- Partner in BABAR DCH Construction at TRIUMF with Italian & U.S. Groups
- TRIUMF detector development lab personnel have contributed to many other projects over the years (e.g. ATLAS HEC, numerous in-house)
- Most recent major project is the T2K TPC for ND280 currently being constructed with European partners

# Current Canadian SuperB Effort

- Request for funds submitted to NSERC from
  - **Carleton (D. Asner)**
  - **McGill (P. Patel, S. Robertson)**
  - **TRIUMF (R. Henderson)**
  - **UBC (C. Hearty, J. McKenna)**
  - **UVic (J.M. Roney)**
- Currently, 1 Student & 1 Research Associate (Gocha) starting work on gaseous tracker-related issues; other student on SuperB related topics
- Will expand if funding request is successful

# Potential Infrastructure support for Canadian SuperB Effort

- TRIUMF mission includes infrastructure support for projects such as BaBar DCH. Contributions to a SuperB detector mentioned in 5 year planning document; designers, engineers, technologists
- Universities also have support staff who have contributed to efforts, e.g. UVic Electronics have responsibilities for T2K FGD electronics+ other specialize technologists

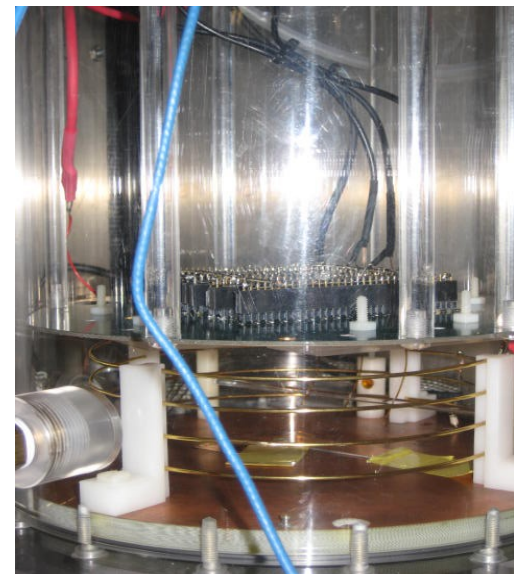
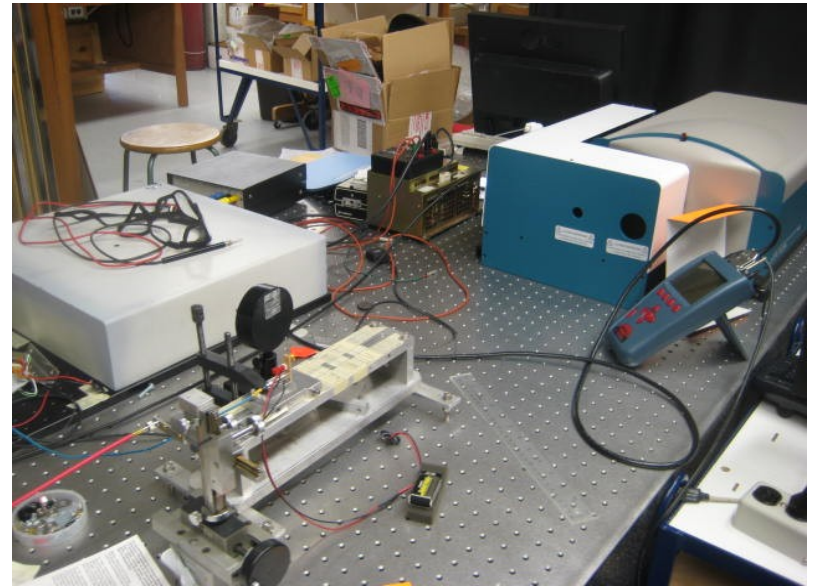
# Lab at UVic

- Currently setup to measure gas properties  $v_{\text{drift}}$ , diffusion, gain to validate magboltz calculations
- MiniTPC
- T2K TPC prototype
- Small Clean Room



# Lab at UVic

- Mini-TPC with Al cathode and 266nm laser can check  $V_{\text{drift}}$  upto to  $\sim 3\text{kV/cm}$  to  $\sim 5\%$ .
- Can also be used to measure relative gas gains.





# T2K TPC Prototype built at TRIUMF now in Lab at UVic

- $<1\%$  Precision

$V_{\text{drift}}$  and  
diffusion

measurement  
with T2K TPC  
Prototype at  
lower fields

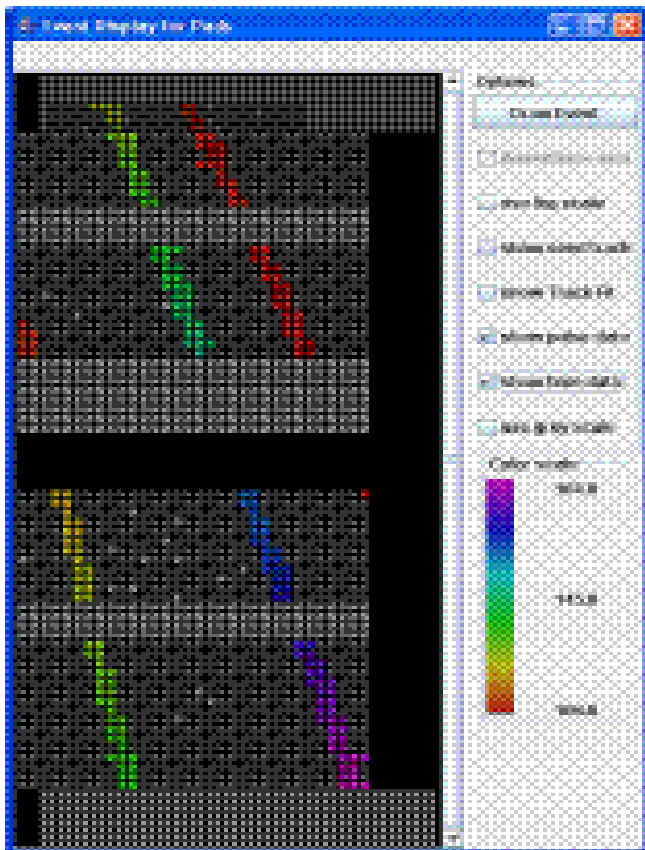


# prototype built at TRIUMF, tested at UVic by Dean Karlen's team: device being use for gas studies



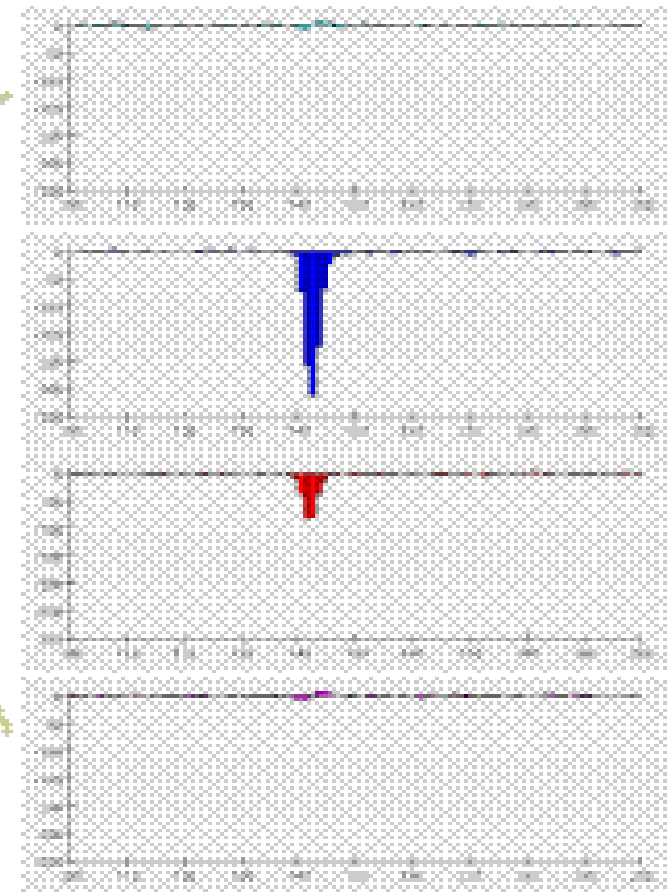
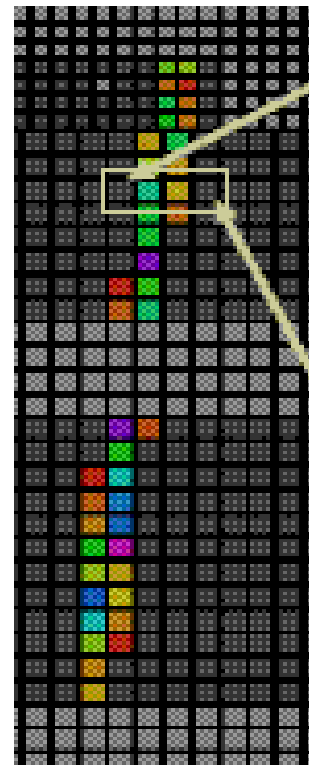
## Prototype: Example cosmic event

coloured according  
to arrival time



December 16, 2007

coloured according  
to amplitude



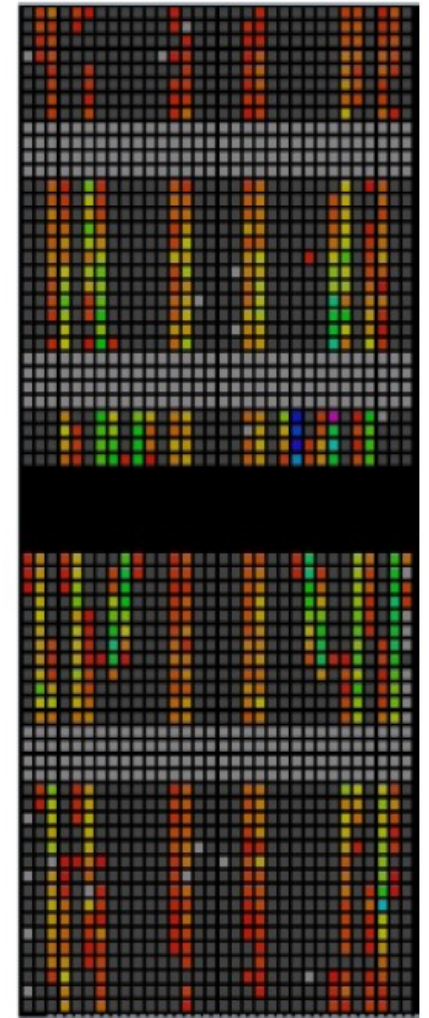
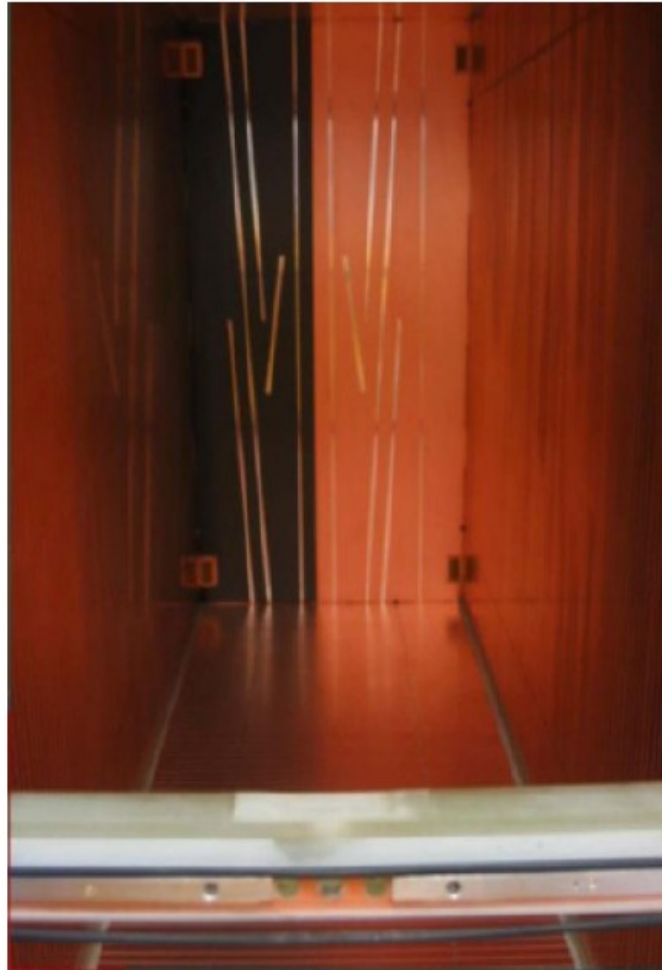
T2K TPC project



# prototype built at TRIUMF, tested at UVic by Dean Karlen's team: device being use for gas studies

A UV pulsed laser used to flash the central cathode with diffuse light: producing photoelectrons from Aluminum

- Worked very well
- drift velocity to 0.01% in few minutes



# Summary

- Infrastructure in place for quick validation of magboltz calculations
- Canadian group keen to contribute to DCH project
- More people expected to become active in coming months as funding becomes available
- Foresee prototyping for TDR next year
- Important to coordinate effort to most effectively use the people available for TDR – develop plans with DCH group to do so during this workshop