

# **2015 Active Targets and TPC for Nuclear Physics Experiments Workshop**

**Monday, 18 May 2015 - Wednesday, 20 May 2015**

**National Superconducting Cyclotron Laboratory**

## **Scientific Programme**

## Invited Speakers

Alexander Gezerlis (University of Guelph). **From nuclear forces to structure and astrophysics**

Jordi Jose (Univ. Politecnica de Catalunya). **Nuclear Astrophysics: the unfinished quest for the origin of the elements**

Alan Wuosma (University of Connecticut). **Transfer reactions: opportunities and challenges for the modern era**

Thomas Aumann (TU Darmstadt). **Giant resonances in exotic nuclei**

Tan Ahn (University of Notre Dame) . **Resonance Studies with Active-Target Detectors: Examples from Prototype AT-TPC**

Ivan Mukha (GSI) . **Exotic decays and processes beyond drip lines**

Daniel Bazin (MSU) . **Active Target Detector types**

Shinsuke Ota (University of Tokyo). **Active target developments in Japan**

Riccardo Raabe (KUL).**Coincidence auxiliary detection devices**

(Tentative). *Electronics and readout*

Marco Cortesi (MSU). **Developments and Applications of Micro-pattern Gaseous Detectors (MPGD): a concise review**

Julien Pancin (GANIL).**Gas properties and optimization for active targets**

## Preliminary program

### See contributed talks in the Timetable

**ATTPC Exchange Dinner**

You all know that TPC, Active Targets, Trackers etc in Nuclear Physics is a new domain.

Today we note a significant number of groups in practically all nuclear physics labs that

are investing in a conceptual design, building and others using TPCs like

instruments.</span>

<span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">We consider that a “live” exchange of ideas, vision, remarks, warnings, results, ... </span><span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">will benefit the community in a number of ways – during the workshop and afterwards.</span>

<span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">So we propose to have this “live” discussion at the latter end of the informal dinner on Tuesday, 19th May.</span>

<span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">Those of you who wish to show a slide to make a point - We will provide the necessary</span>

<span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">(please send the slide 24hrs before the session to attpc2015@nscl.msu.edu).</span>

<span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">Those of you who have a timid approach – We will provide a microphone.</span>

<span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">Those who simply want to listen – We will provide the beer.</span>

<span style="color: rgb(34, 34, 34); font-family: arial, sans-serif; font-size: 12.8000001907349px;">We hope that you will come and invite you to participate.</span>

**<u>Post Workshop GET meeting:</u>**

## **Generic Electronic System for Nuclear TPCs**

Over the 2 years a relatively large number of collaborations have been building instruments for nuclear physics experiments. They have requested to acquire and got the GET system or parts of it. Today we count approximately 20 instruments that will employ the system.

Experiments have already been achieved with the proto-type. Today we are close to fully complete the system. The last production modules should be delivered by middle of the year. We expect to have produced approximately 100,000 channels with the corresponding software and firmware.

The management board of GET\* by the end of the year would have completed its tasks and will be dissolved. Today we consider that the time is ripe to launch a collaboration of GET users. Should we agree to this, the objectives could be quite varied. It would include in particular the infrastructure for exchange, updates, extending and maintaining of the system. You will no doubt agree that these are essential particularly over the first 2 to 3 years of operation.

Further given the interests of such collaboration, it is most likely that we could include items associated with other aspects of TPCs. Examples such as Gas Amplifiers, Field Cage designs, etc as applied specifically to nuclear physics. Namely a collaboration akin to the CERN RD51 (<http://rd51-public.web.cern.ch/RD51-Public/>) but with modest ambitions.

What we propose is that on Wednesday afternoon 20<sup>th</sup> May at NSCL, we hold a two hour meeting where we will attempt to explore and possibly set up a working group to define and structure such a collaboration.

So through this mail I invite all those who wish to join to stay for an afternoon session.

Yours Sincerely,

Emanuel Pollacco for the GET MB

\* MB is made up of two members from CENBG, GANIL, NSCL and IRFU

## Opening

## Physics and Experiments

Physics and experiments

- o Nuclear Astrophysics
- o Transfer reactions
- o Giant resonances

- o Resonance studies
- o Exotic decays and processes
- o Analysis and simulation
- o Others

## **Active target detectors and associated electronics**

Active target detectors and associated electronics

- o Detector types
- o Coincidence auxiliary detection devices
- o Electronics and readout
- o Simulation
- o Others

## **Technical issues**

Technical issues

- o Micro-pattern Gas Amplifiers
- o Gain and energy resolution
- o Gas properties and their optimization
- o Others

## **Closing**