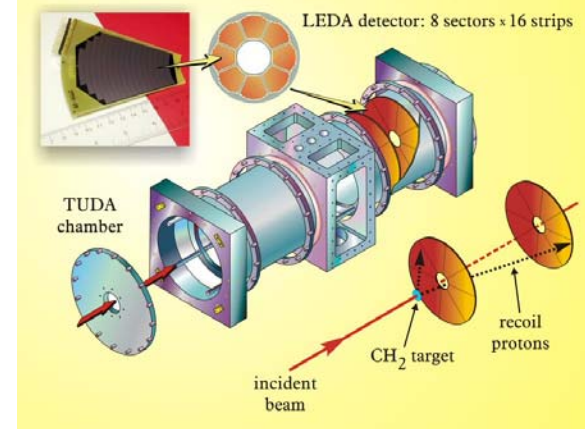
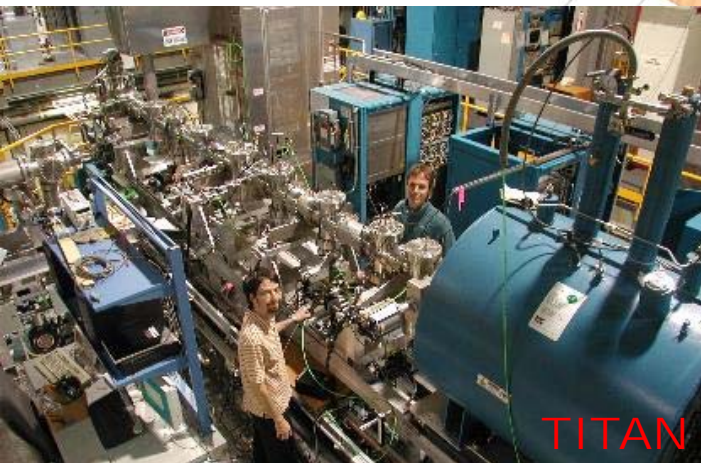
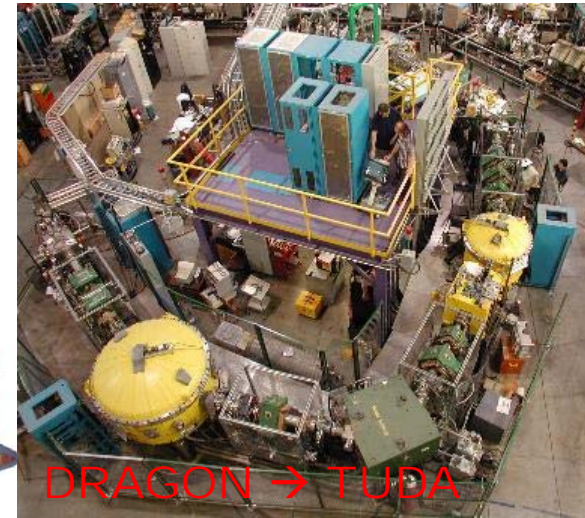
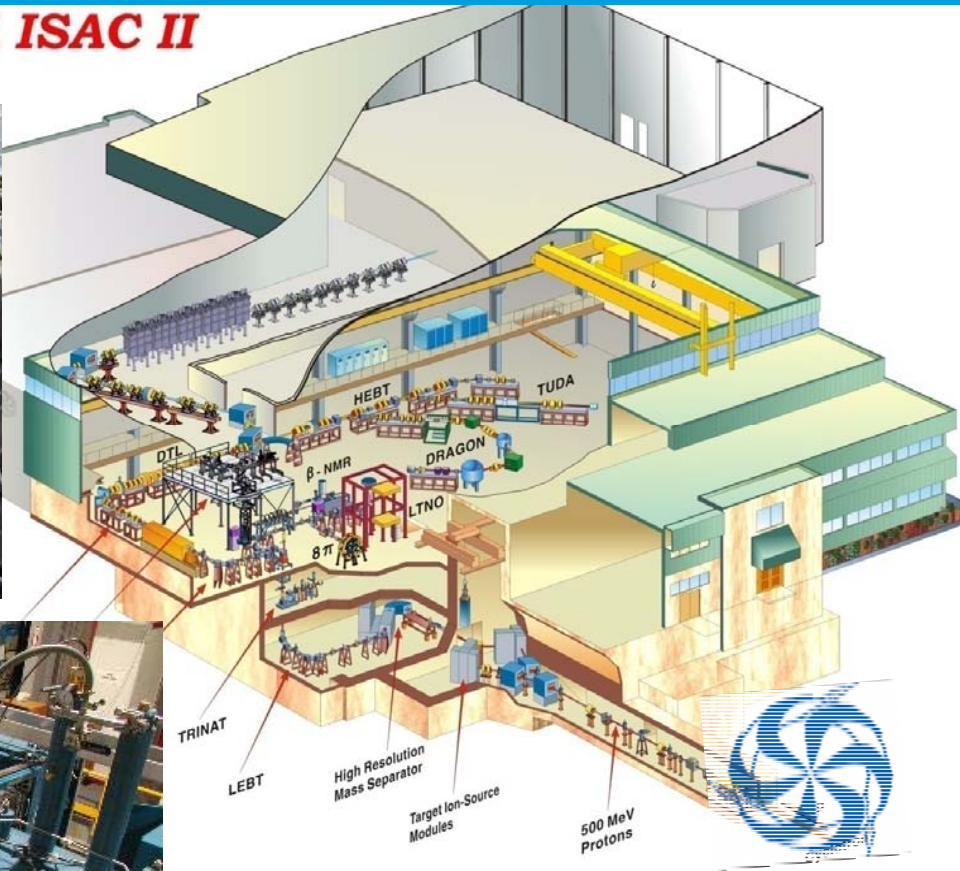
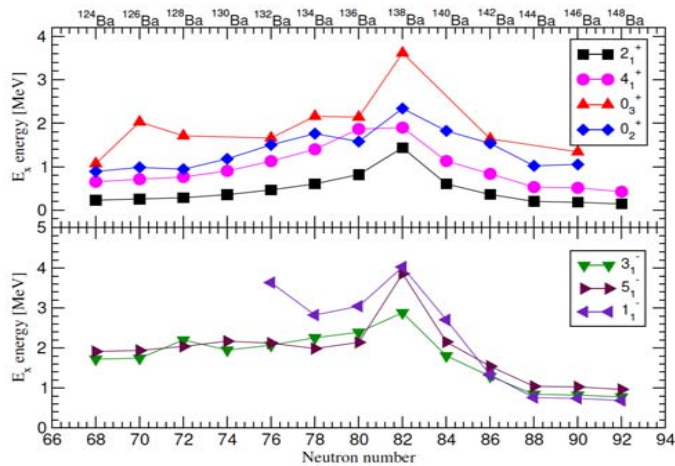


**ISAC I and ISAC II**

Equipes: NESTAR, NEXT, SDF

# Shape coexistence in the $^{116,118,120}\text{Cd}$ , $^{140,142,144,146}\text{Ba}$ and $^{134,136}\text{Nd}$ studied using $\beta$ -decay and the GRIFFIN setup

•Spokespersons : C. M. Petrache (IJCLab), C. Andreoiu (SFU/TRIUMF)



TRIUMF
Canada's national laboratory for particle and nuclear physics  
Laboratoire national canadien pour la recherche en physique nucléaire et en physique des particules

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Experiments	<b>TRIUMF — EEC Submission</b> EEC meeting: 202301S Original Proposal	<b>Exp. No.</b> S2304 — Approved
Spokespersons' Portal		<b>Date Submitted</b> 2022-12-14 10:42:03
LSPEC Portal	<b>Title of Experiment</b> Exploring the predicted shape coexistence in $^{134,136}\text{Nd}$ using the beta-decay of $^{134,136}\text{Pm}$ and GRIFFIN + PACES setup	
LSPEC Ops Portal	<b>Detailed Information</b> <a href="#">Complete / merged PDF</a> <a href="#">Form data only</a> <a href="#">Detailed Statement</a>	
MMS-EEC Portal	<b>Spokesperson(s) for Group</b> <a href="#">C. Andreoiu, C. Petrache</a>	
SAP-EEC Portal		
Administrators' Portal		

**Shape coexistence is a topic of utmost importance in nuclear structure and in recent years has been studied intensively using various setups. One of the best in the world is GRIFFIN + ancillaries (PACES, DESCANT) at TRIUMF.**

**Significant results have been obtained within this collaboration on  $^{80}\text{Ge}$ ,  $^{116,118,129,134}\text{Sn}$ ,  $^{135,136,137}\text{Nd}$ , and  $^{130,131}\text{Ba}$ ,  $^{160}\text{Eu}$  from experiments performed using GRIFFIN, FIPPS, GALILEO, JUROGAM.**

**One new experiment was approved and two proposed for a total of 18 days on  $^{134,136}\text{Nd}$ ,  $^{116,118,120}\text{Cd}$  and  $^{140,142,144,146}\text{Ba}$ , hopefully scheduled next year.**

**Demande: 12 kE missions plus 2 kE fonctionnement (3 personnes)**

## PHYSICAL REVIEW C

covering nuclear physics

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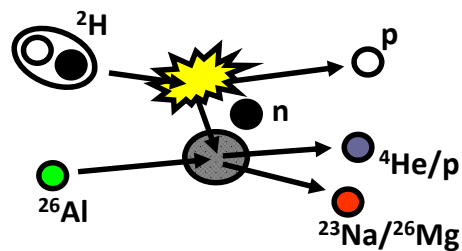
Decay spectroscopy of  $^{160}\text{Eu}$ : Quasiparticle configurations of excited states and structure of  $K^\pi = 4^+$  bandheads in  $^{160}\text{Gd}$

D. Yates et al  
Phys. Rev. C **107**, 064309 – Published 15 June 2023

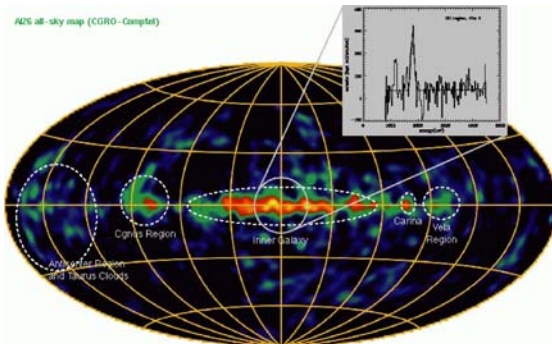
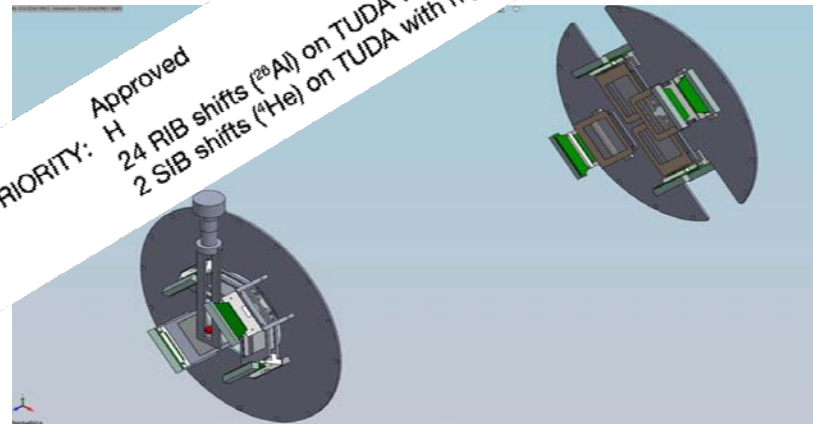
# The $^{26}\text{Al}(n,p/\alpha)$ reaction via the THM @ TRIUMF

Spokespersons: M. La Cognata (LNS-Catania), D. Mengoni (INFN-Legnaro); A. Cacioli

Collaboration : LNS-Catania, INFN-Legnaro, IJCLab (F. Hammache, N. de Séréville), GANIL (F. de Oliveira), TRIUMF, York,...



STAGE: Approved  
 PHYSICS PRIORITY: H  
 SHIFTS: 24 RIB shifts ( $^{26}\text{Al}$ ) on TUDA with high priority  
 2 SIB shifts ( $^4\text{He}$ ) on TUDA with high priority



Observation of 1808.65 keV  $\gamma$ -rays from the decay of  $^{26}\text{Al}$  to  $^{26}\text{Mg}$  in the interstellar medium demonstrated that  $^{26}\text{Al}$  nucleosynthesis does occur in the **present Galaxy**. The present-day equilibrium mass of  $^{26}\text{Al}$  was found to be  $2.8 \pm 0.8 M_{\text{sun}}$ .

The irregular distribution of  $^{26}\text{Al}$  emission seen along the plane of the Galaxy provided the main argument for the idea that **massive stars** dominate the production of  $^{26}\text{Al}$ . (Diehl et al 2006)

Budget demandé:  
 2 missions d'une semaine : 4000 €

$^{26}\text{Al}$  nucleosynthesis in massive stars:  
 $^{26}\text{Al}$  yield depends crucially on  $^{26}\text{Al}(n,p)$  and  $^{26}\text{Al}(n,\alpha)$  reaction rates  
 Rates  $\times 2 \rightarrow 26 \text{ Al yield}/2$

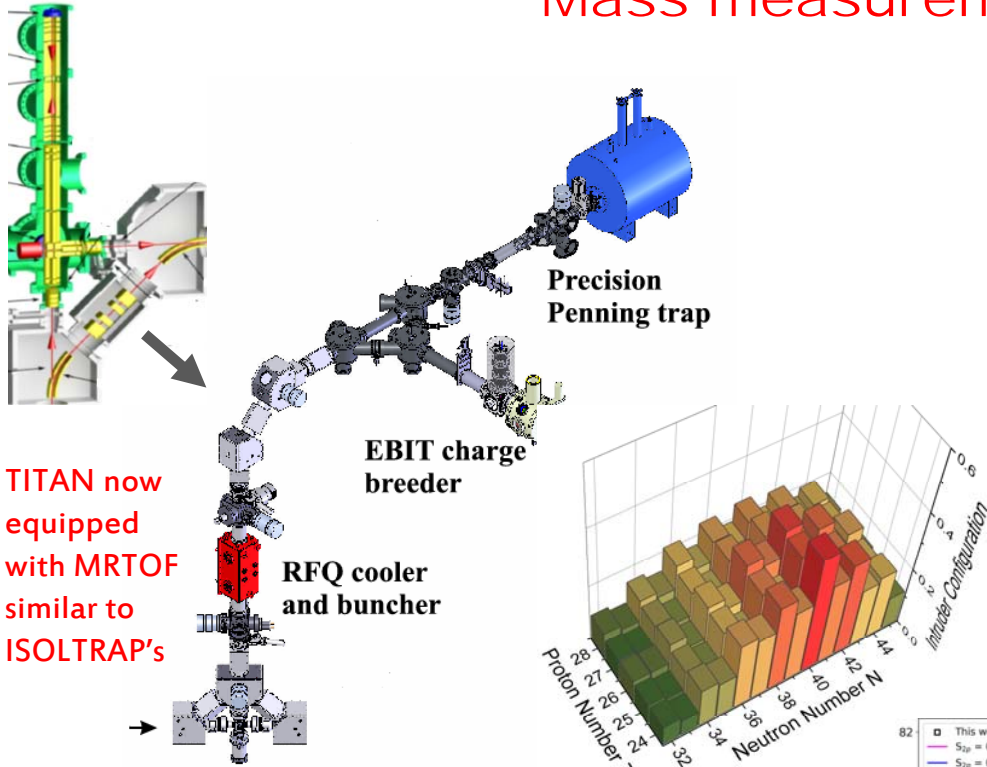
Limongi et al., 2006 & Woosley et al., 2007, Iliadis et al. 2001

# Mass measurements with TITAN

IJCLab spokesperson of 4 TITAN experiments (member of 11)

Programme 2024:

New proposals for 24O and 30Ne plus program for Highly charged ions with EBIT (S. Naimi and D. Lunney)



TITAN now equipped with MRTOF similar to ISOLTRAP's

<u>AP 2024</u>	<u>Demandé</u>
<b>TUDA:</b>	<b>4000</b>
<b>GRIFFIN:</b>	<b>14000</b>
<b>TITAN:</b>	<b>6000</b>
<b>Total:</b>	<b>24000</b>

<u>AP 2023</u>	<u>Demandé</u>
<b>DRAGON:</b>	<b>0</b>
<b>GRIFFIN:</b>	<b>16000</b>
<b>TITAN:</b>	<b>4000</b>
<b>Total:</b>	<b>20000</b>

## Recent publications with TITAN including IJCLab

- 2023: NPA Jacobs et al. (25–26Ne)
- 2023: PRC Lykiardopoulos et al. (152–159Yb)
- 2022: Phys. Lett. B - 64Cr N=40 lol "summit"2020:

