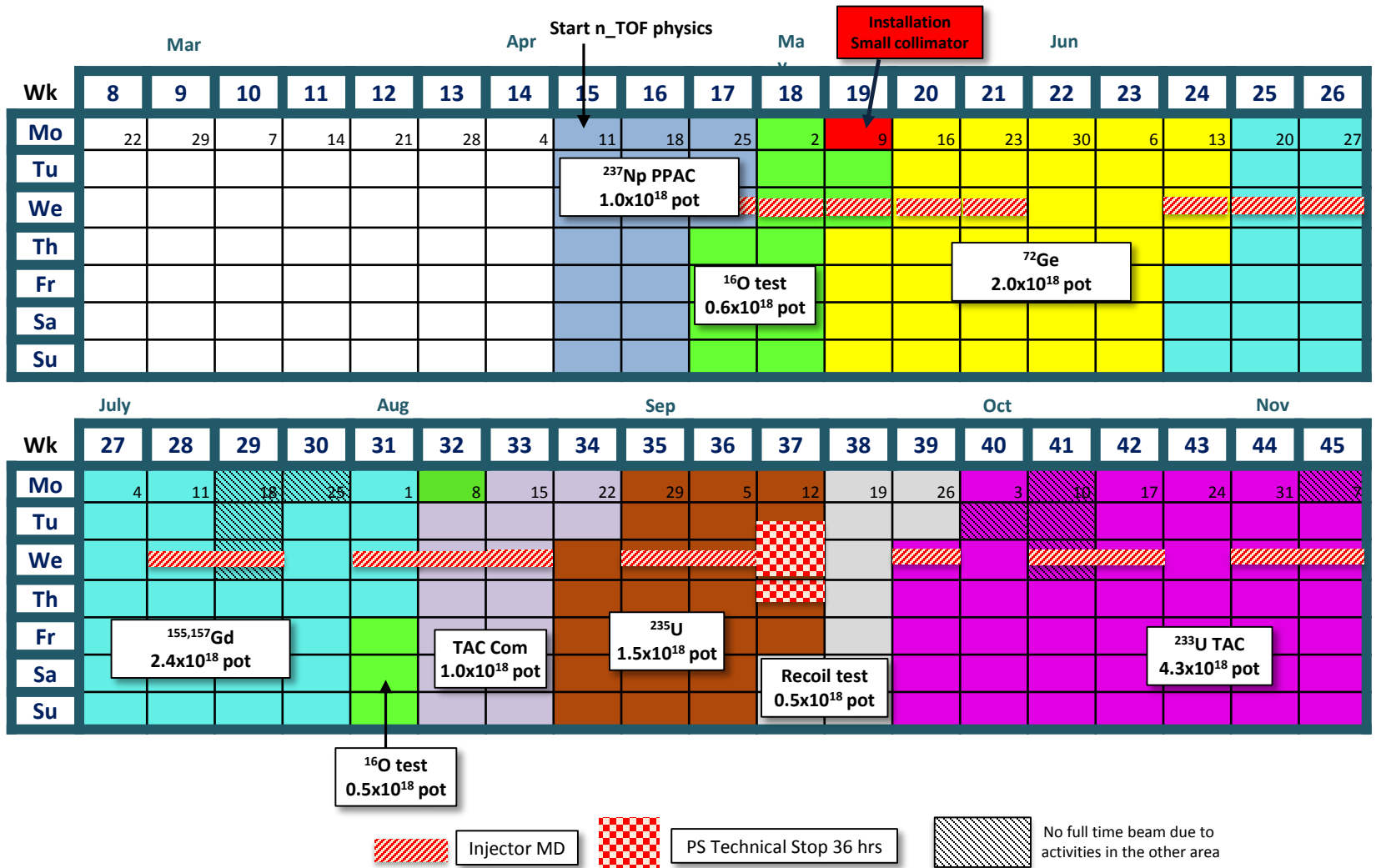
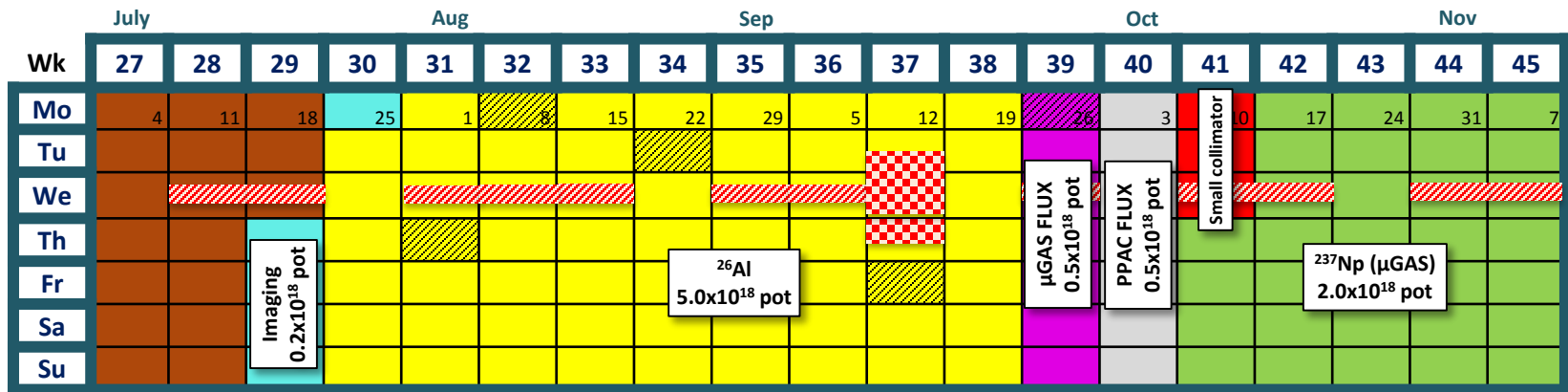
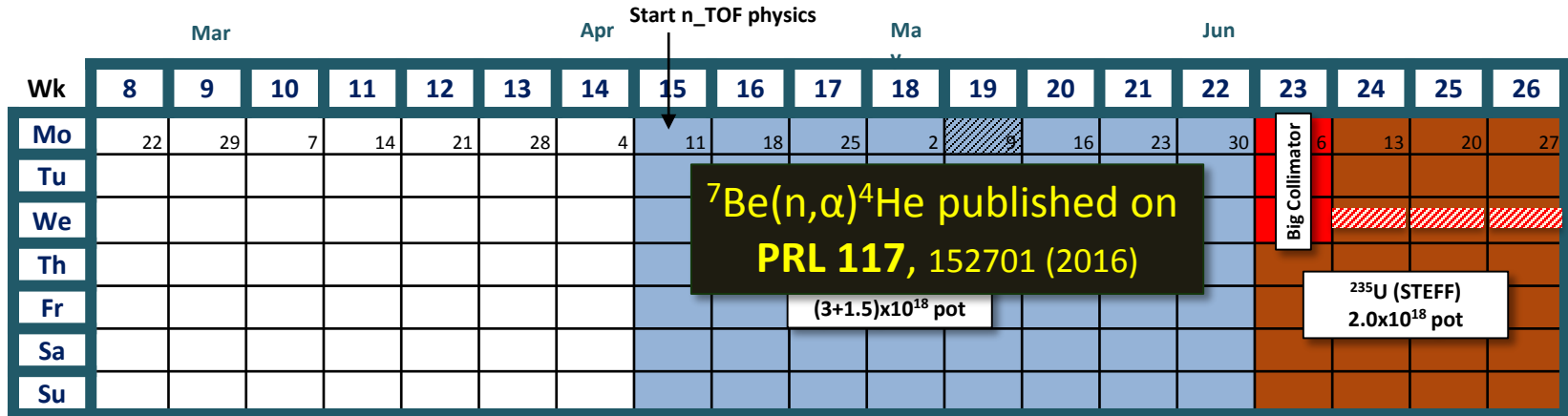


n_TOF Report

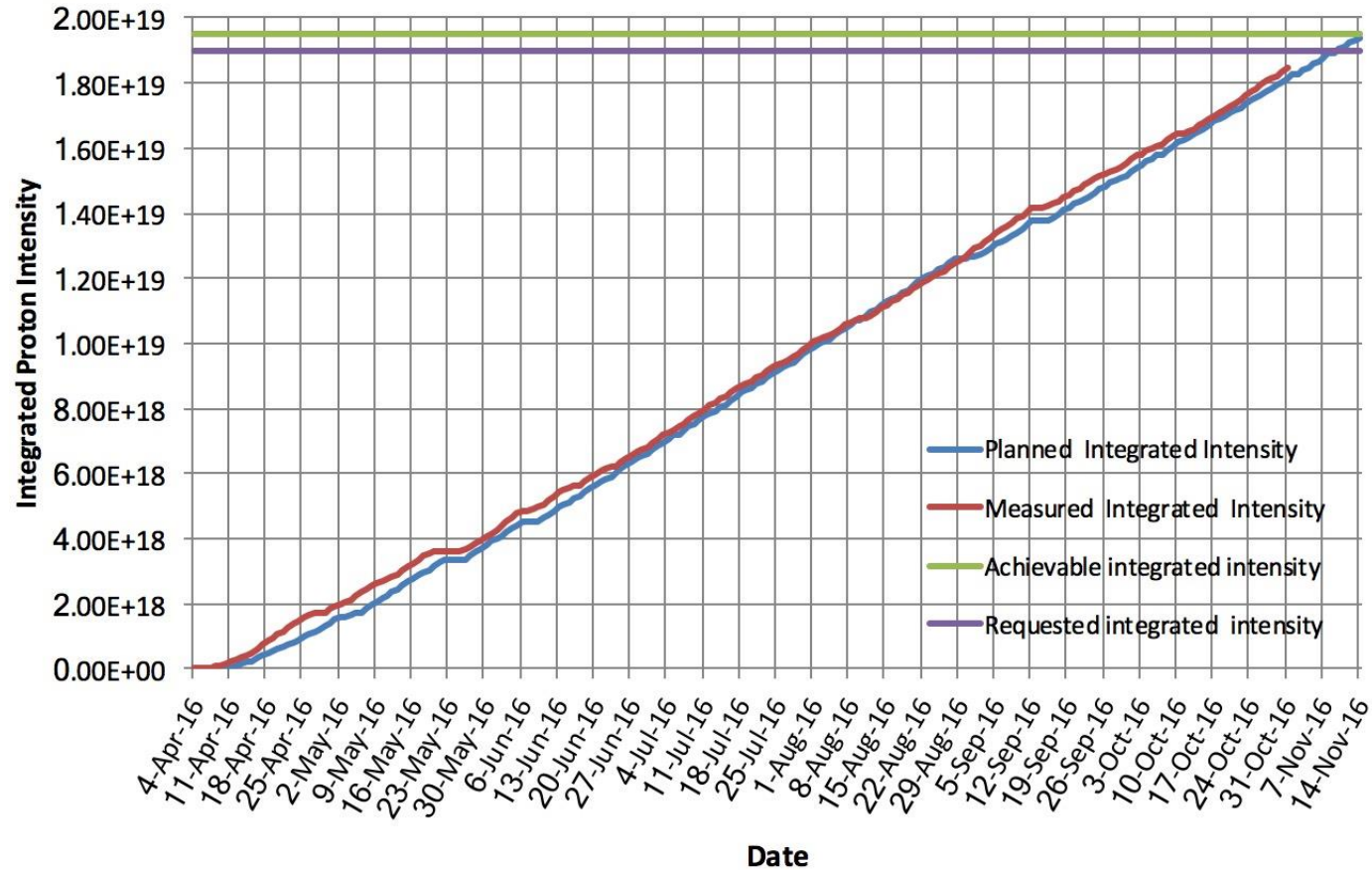
Daniela Macina
n_TOF Run Coordinator
CERN





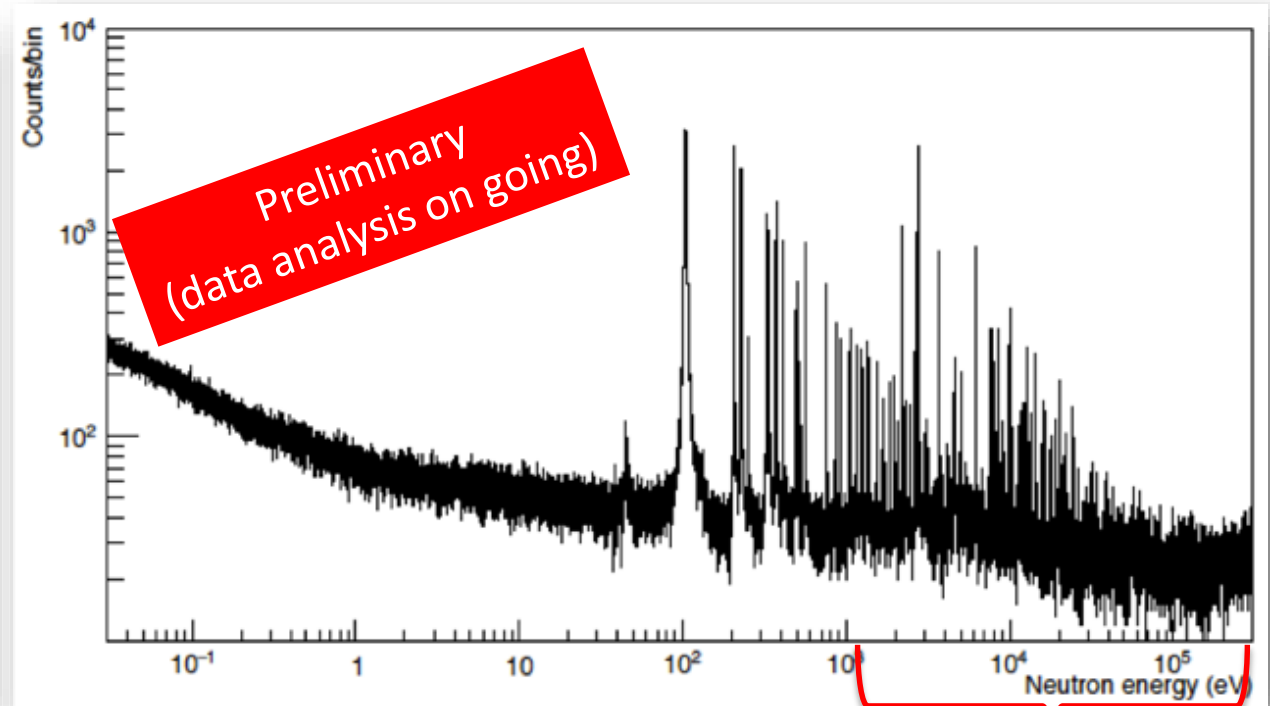
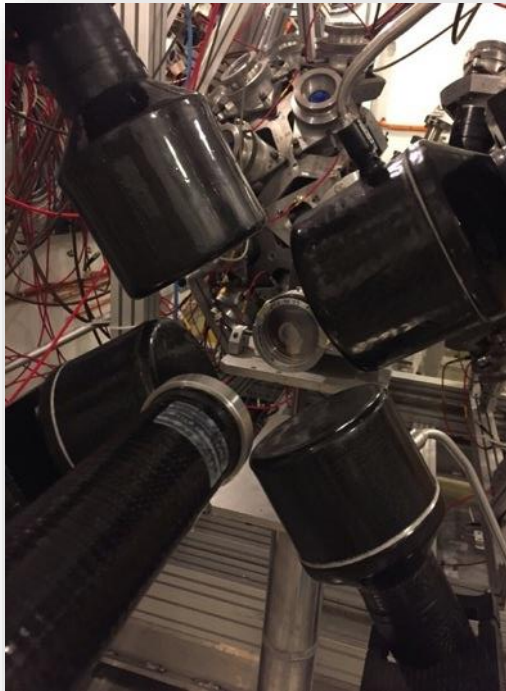
Planned & Measured Integrated Intensity 2016 nTOF Run

(1.95×10^{19} P.O.T. planned, based on 2016 injector schedule ver. 1.4)



Courtesy R. Steerenberg (BE/OP)

With the ^{72}Ge , we successfully end the measurement of the (n,γ) cross sections of the isotopes ^{70}Ge , ^{72}Ge , ^{73}Ge , ^{74}Ge , ^{76}Ge which is of importance for the astrophysical slow neutron capture process



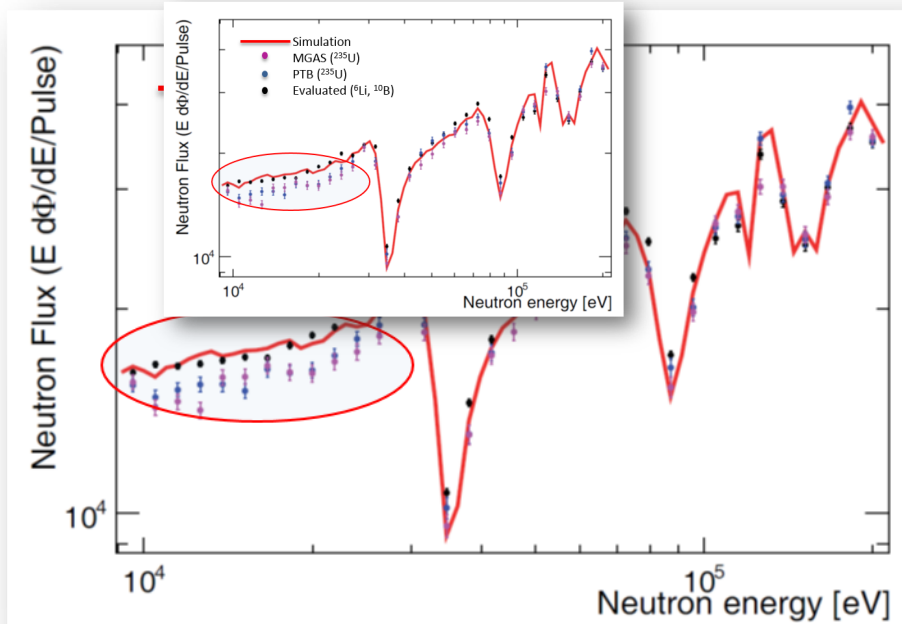
Region of interest for astrophysics

Measurement supported by an ERC Starting Grant (PI Lederer)

Courtesy C. Lederer

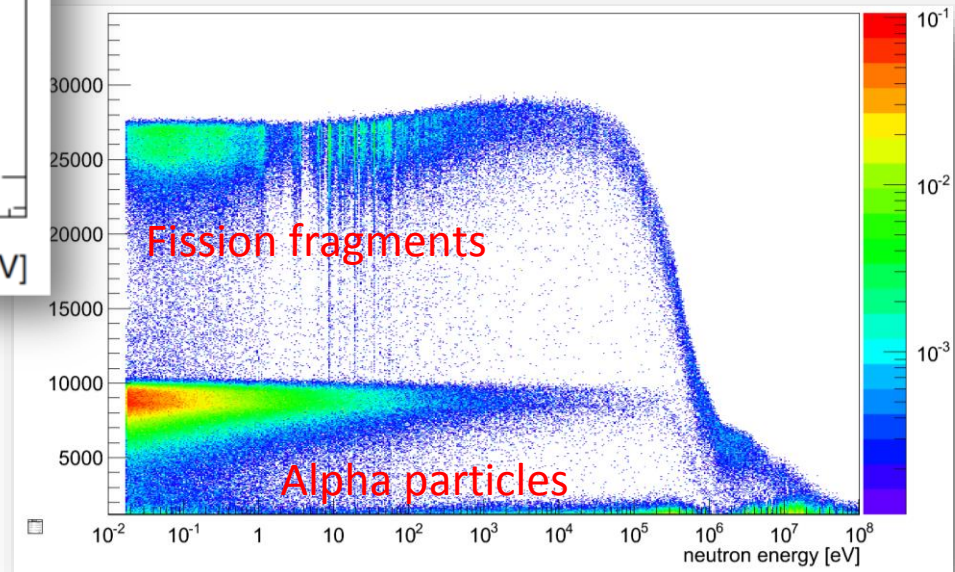
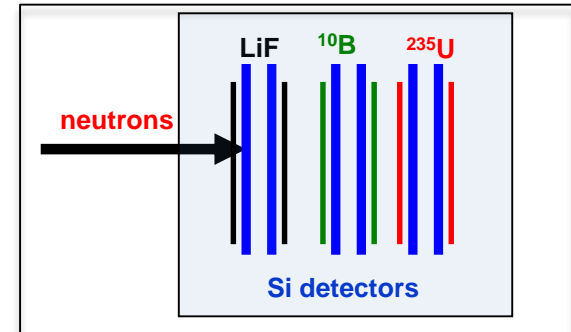
$^{235}\text{U}(n,f)$ cross-section might be systematically overestimated in the 10-30 keV region. This cross section is important as often used as:

- a reference in cross-section measurements of **major and minor actinides**.
- to measure **neutron fluxes** (MACS..).
- can have a significant impact on **fast critical reactor and sub-critical ADS**.



$^{235}\text{U}(n,f)$ cross section measured together with the reference reactions $^6\text{Li}(n,t)$ and $^{10}\text{B}(n,\alpha)$

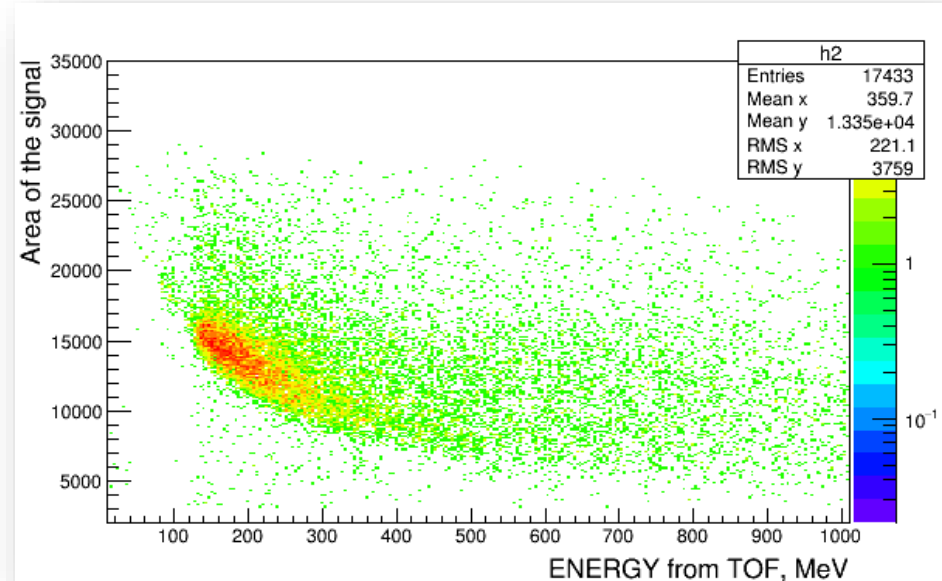
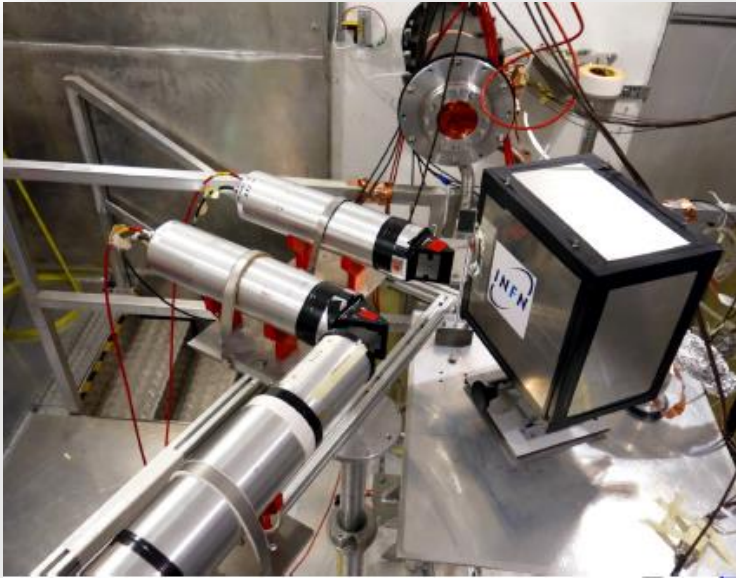
Silicon detectors stack ($5 \times 5 \text{ cm}^2$ and $200 \mu\text{m}$ thick)



Courtesy M. Barbagallo

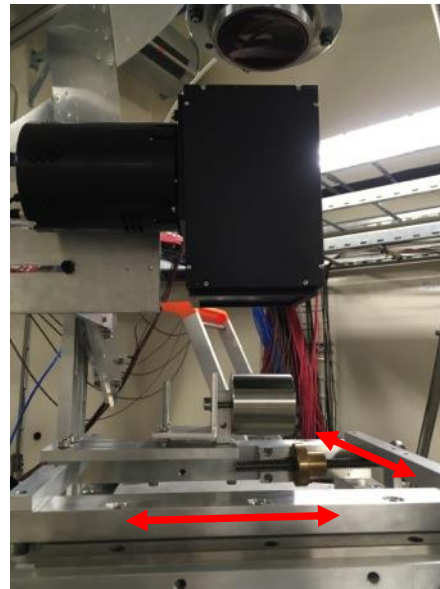
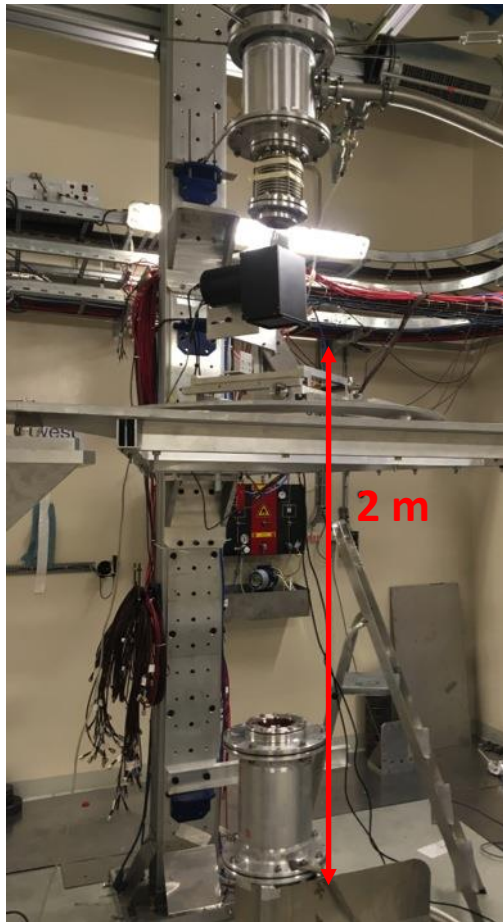
Test in view of the measurement of $^{235}\text{U}(n,f)$ vs $\text{H}(n,n)\text{H}$ in EAR1 for $E_n > 20$ MeV

Proton energy released in one PRT scintillator

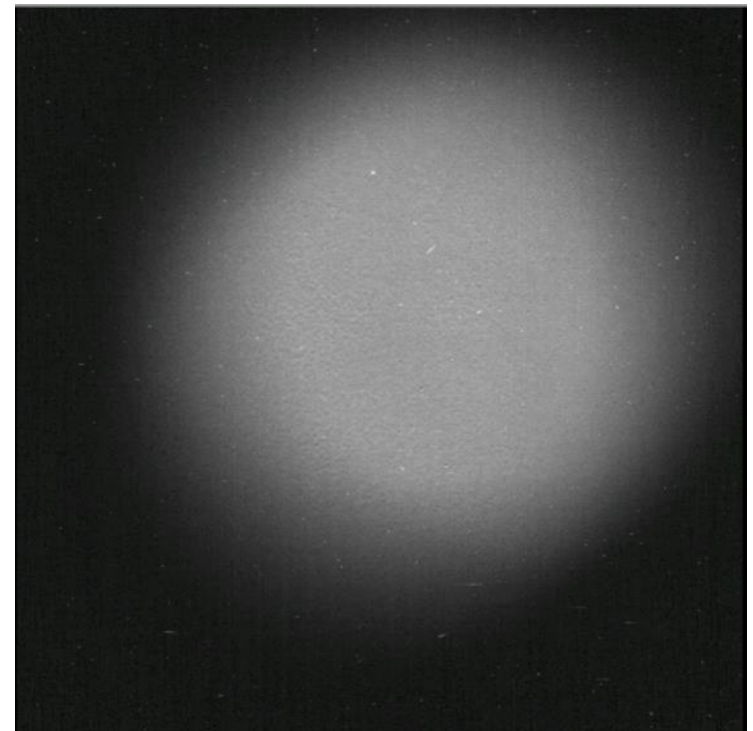


- Possible to reach energies of few hundreds MeV (effect of γ -flash less severe than expected)
- PMT gating allows to go close to 1 GeV
- Test in summer 2017:
 - More compact and efficient design
 - Fine tuning and final configuration

Courtesy C. Massimi & R. Nolte

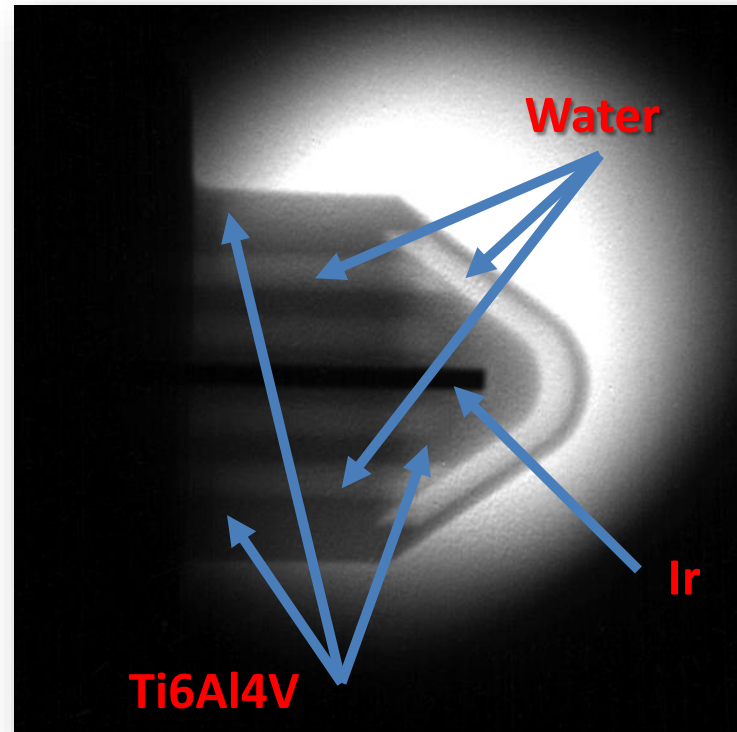
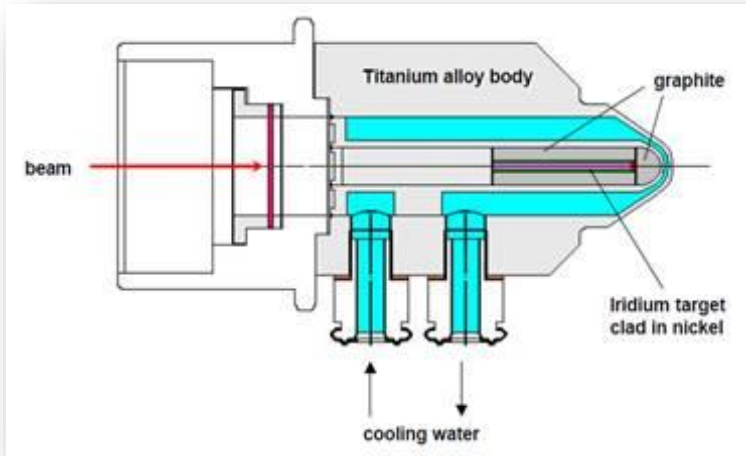


Station resolution = 6.5 μm



Big collimator (8 cm diameter), 2×10^7 neutrons/pulse @ thermal peak

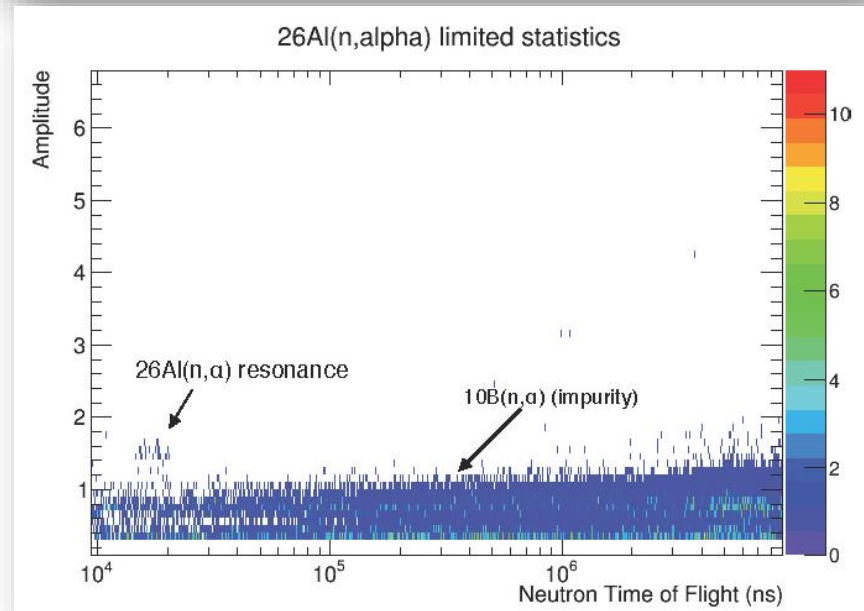
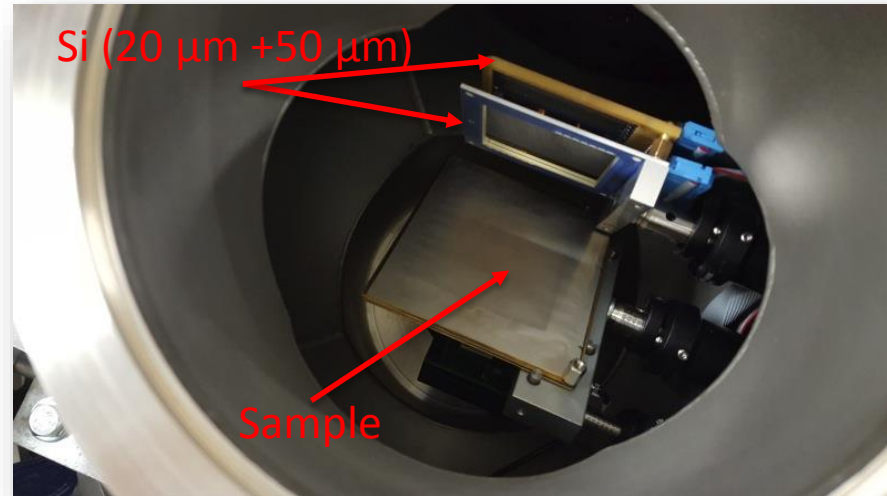
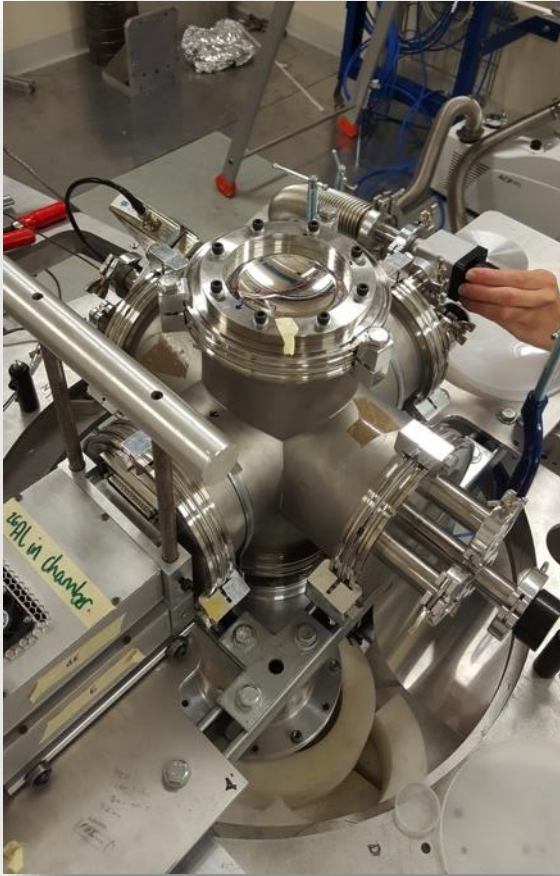
Courtesy M. Calviani & F. Mingrone



AD target (~2h of measurement time)

Courtesy M. Calviani & F. Mingrone

Prediction of the galactic ^{26}Al abundance

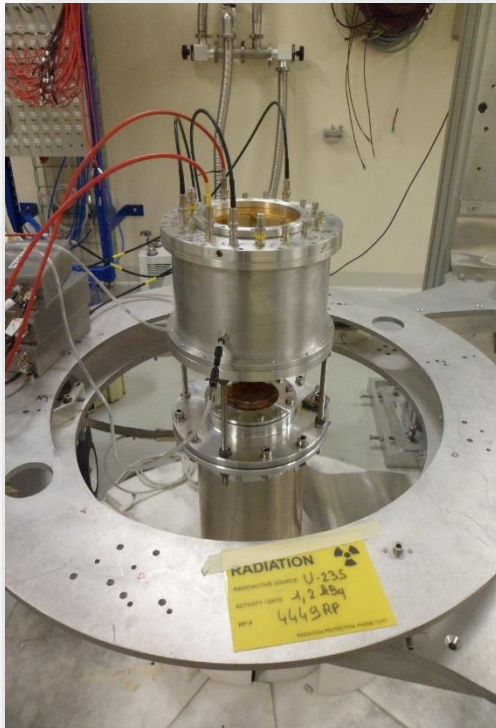


Courtesy C. Lederer & S. Lonsdale

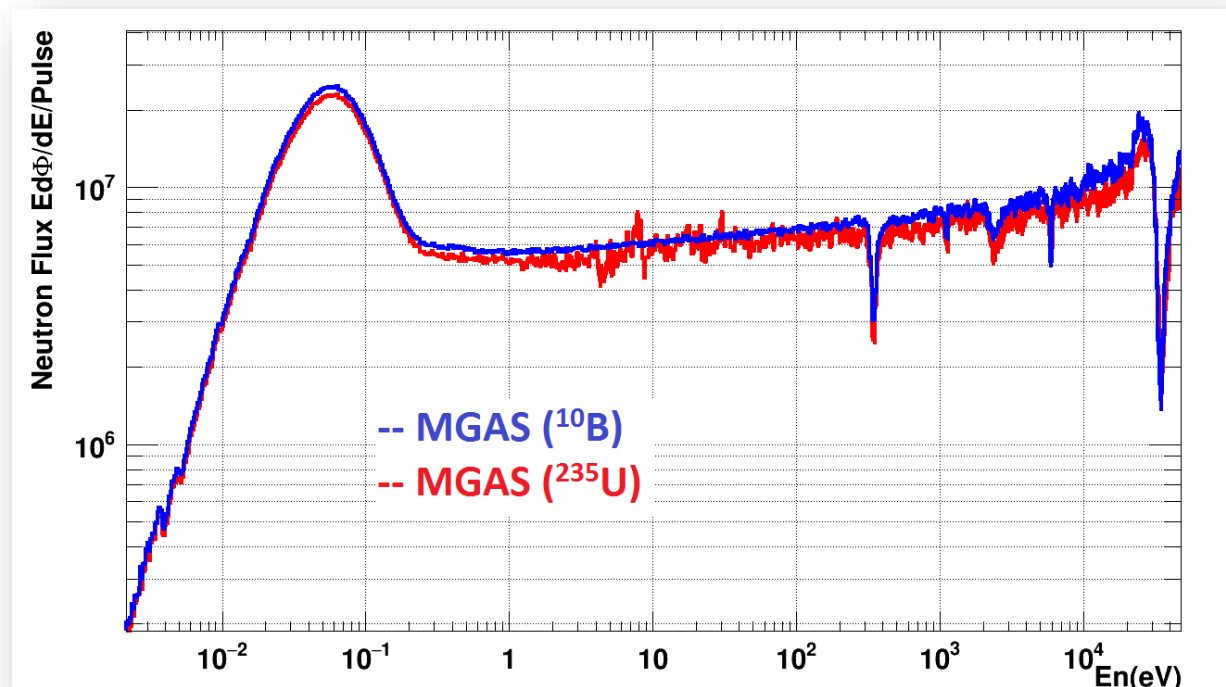
Preliminary data of the neutron flux at EAR2 for the big collimator measured with two MicroMegas detectors equipped with:

- **117.6 $\mu\text{g}/\text{cm}^2$ ^{235}U onto 30 μm thick Al foil** and
- **20 nm of $^{10}\text{B}_4\text{C}$ onto 18 μm thick Al layer.**

Preliminary

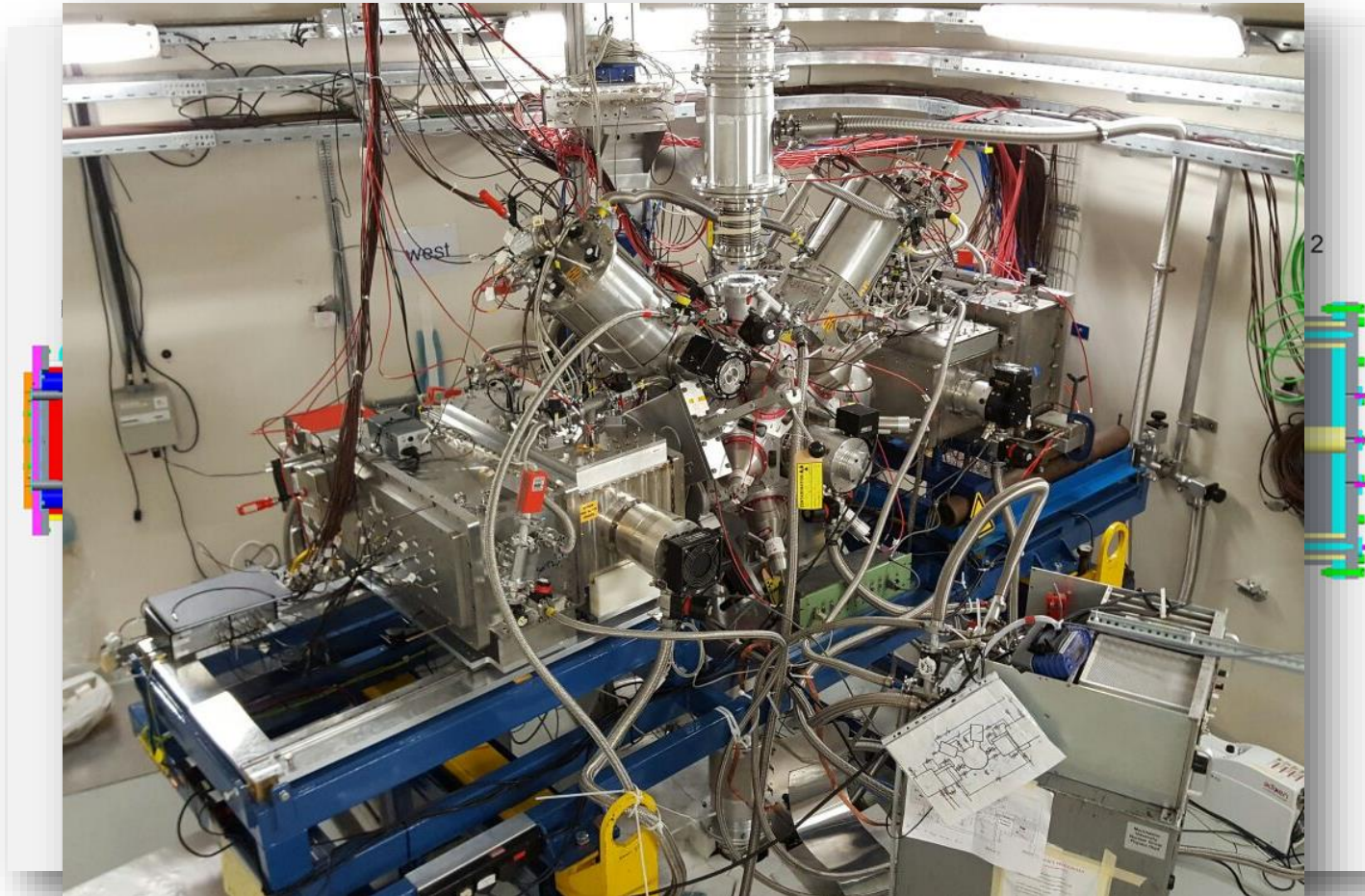


Chamber placed at the exit of the beam pipe (nominal position of SiMon2)

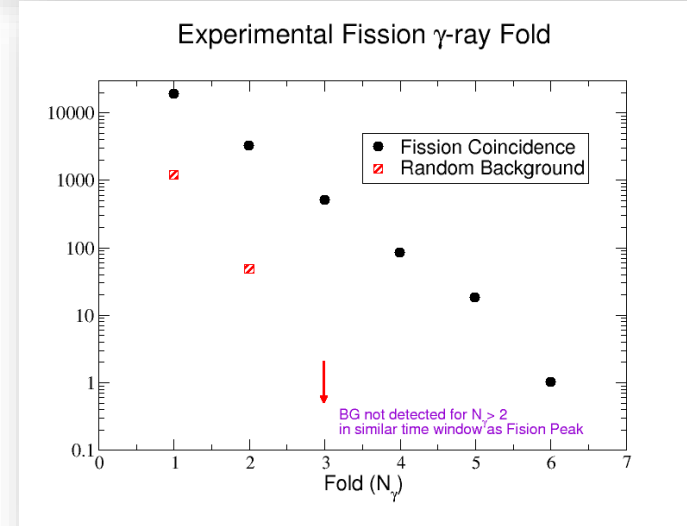
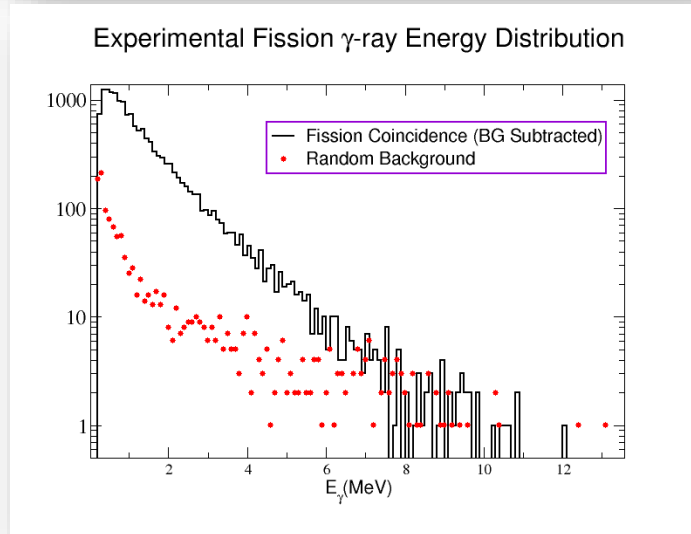
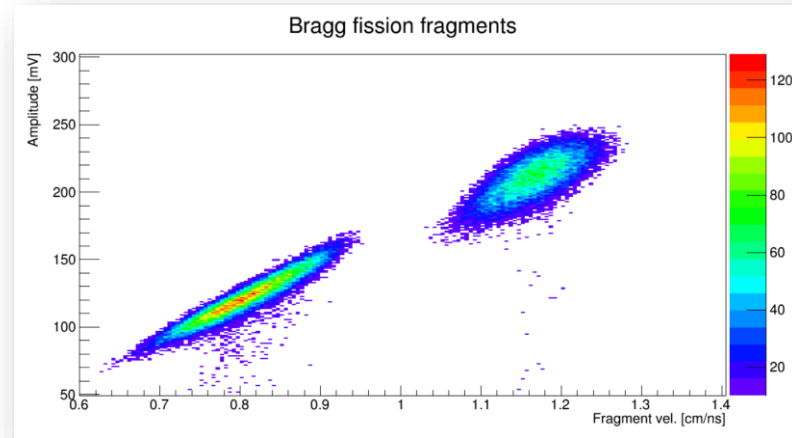
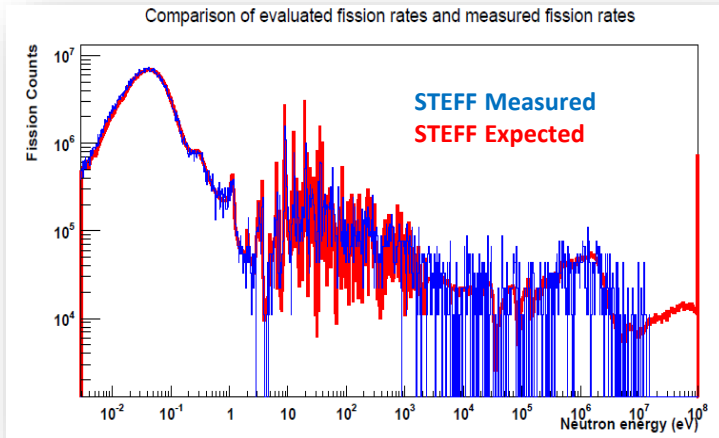


Courtesy M. Sabaté Gilarte

gamma-ray energy spectra and multiplicities from the $^{235}\text{U}(n,f)$ using **S**pectrometer for **E**xotic **F**ission **F**ragments



Courtesy G. Smith



STEFF Measures Fission Gamma Rays in Environment With Raw Signal/Background ~ 0.001

Courtesy G. Smith

- Again a successful year for the n_TOF data taking
- All experiments have collected the requested number of protons
- First preliminary results show very good quality of the data recorded