

**AFAC Collaboration meeting Report - SP2 PP WP7.1**

**Date:** 4th April 2011

**Place:** Eilat NPA Conference in Israel

**Participants:** F De Oliveira, M. Hass, T.Hirsh, P. Ujjc

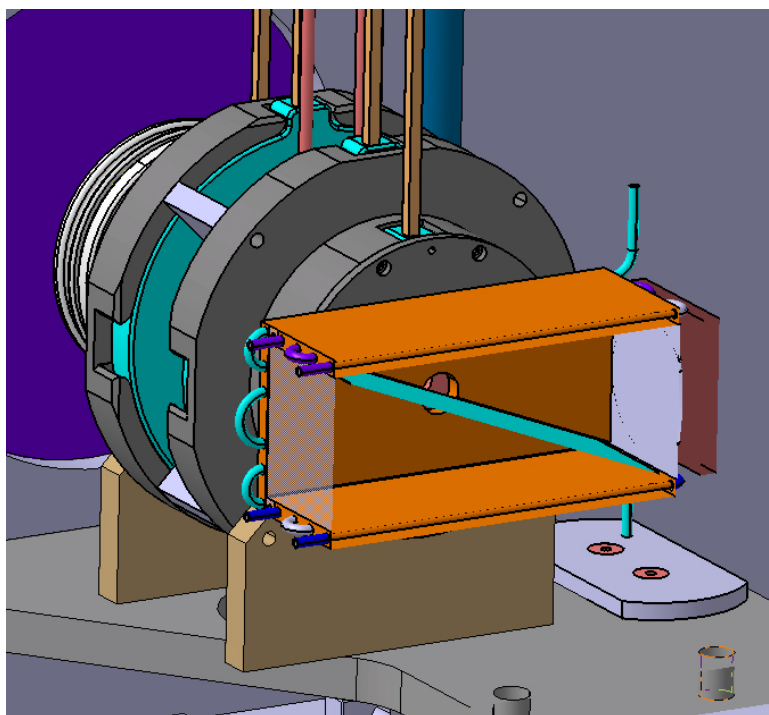
**Discussions**

**Report about the work made at GANIL**

FdO reported about the work that has been made at GANIL during the last months. Also, he presented this work in a talk given during the main session of the conference.

The cross section of the reaction  $^{12}\text{C}(^3\text{He},n)^{14}\text{O}$  was measured at Rez (CZ). A report was submitted for publication in a reviewed journal. We finished taking into account the corrections suggested by the referees, a new version was submitted recently. A production rate of  $2 \cdot 10^{11}$  pps is expected using a 1 mAe beam.

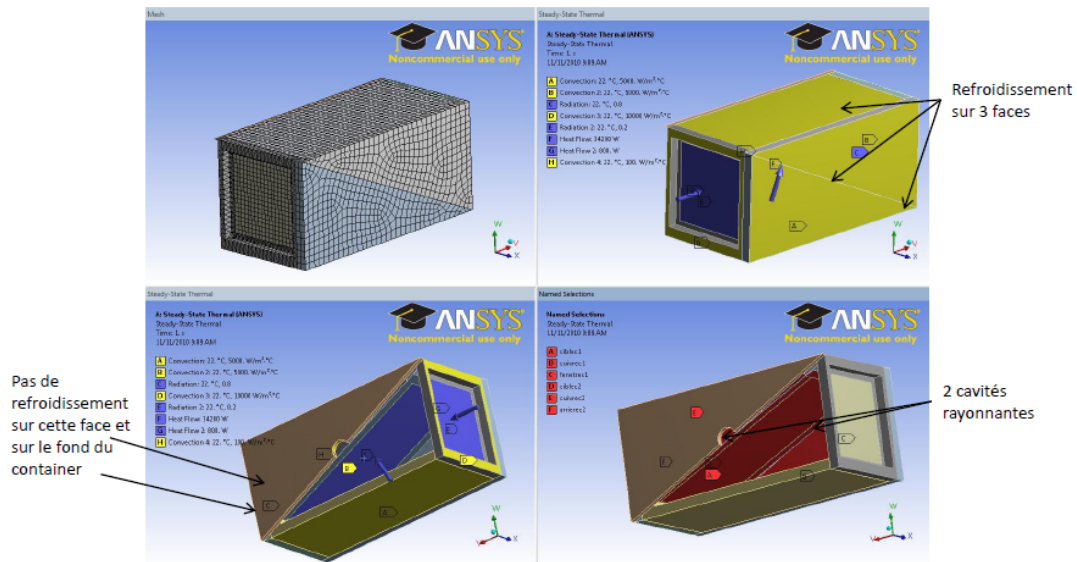
A first design of the target container was produced (see below).



The container is made to produce  $^{14}\text{O}$  and  $^{15}\text{O}$  using a tilted foil of carbon, 500  $\mu\text{m}$  thick. At the back of the container, a beam catcher made of carbon was placed for safety reason. The container is put inside the production unit (module de production). It is connected to the ECR source through a short cold pipe. The container is cooled down with water. Thermal issues has been studied by Frederique Pellemoine (From GANIL), using a 3D simulations code. A report is going to be produced. See below the first model that was used.

## Calculs ANSYS 3D

- Les calculs précédents ne prennent pas en compte le rayonnement mutuel entre la fenêtre (qui est chaude et qui rayonne avec une face à 2200 ou 2300K), la cible et la boîte refroidie. Un calcul ANSYS préliminaire a donc été réalisé.
- Conditions limites



We worked also on the beam sweep profile in order to make the energy deposited in the foil as uniform as possible, and so to limit thermal constraints. A "triangle" shape was found to be the best solution. (see below).

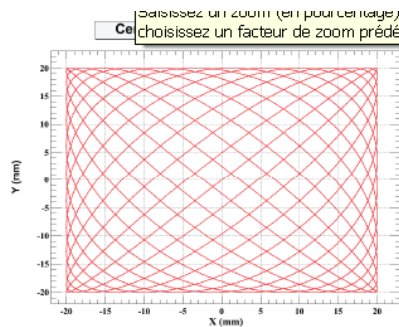


Figure 3 : Trajectoire pour le cas sinusoïdal.

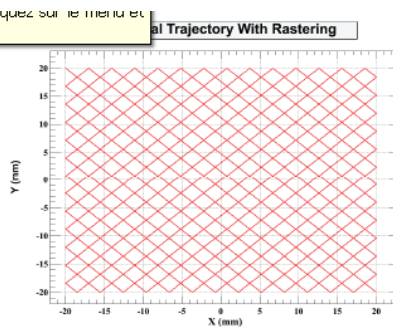
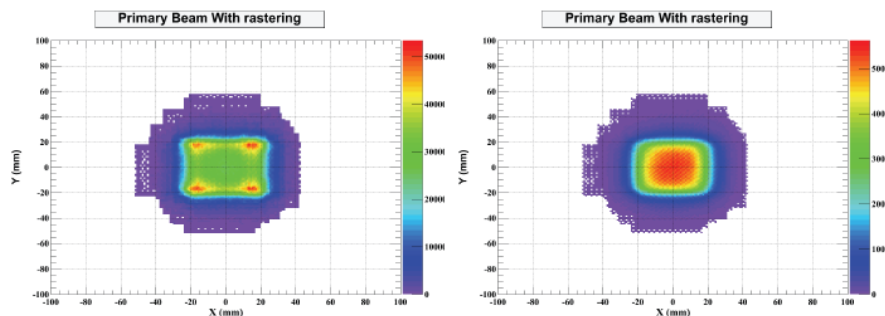



Figure 4 : Trajectoire pour le cas triangulaire.

Nous pouvons à présent présenter les résultats obtenus de la tâche du faisceau cumulé et balayé selon ces deux méthodes mais pour des paramètres d'amplitude et de fréquences identiques (Figure 5 à Figure 8, distributions respectivement calculées depuis le fichier dst de Tracewin et depuis un tirage aléatoire dans une gaussienne symétrique).



	<b>Collaboration Meeting Report</b> <b>Light RIB</b> <b>Autres Faisceaux Autres Cibles</b>	
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2	<b>Report about the work made at Soreq:</b> (see file enclosed)	
3	<b>Future plan at GANIL</b> Here is the discussed and proposed plan for the 14O/15O target: June 2011: Final Report for SP2-PP WP7.1 March 2012: Building of a first prototype of the container. It could be made before if the decision to make the container is taken before summer 2011. It includes blackening of the chamber inside. June 2012: Container tested for thermal issues Dec. 2013: Building of the container – final version.  About other beams – no decision taken. It seems that $^6\text{He}$ is the best “second candidate”.	
4	<b>Future plan at Soreq</b> (see file enclosed)	

In addition to the meeting, two talks were given by us during the conference about these subjects.