



?

Tips and tactics on :
<https://www.ganil-spiral2.eu/explore>



50

Delete 11 and 39

You put your dosimeter next to the reader. Now, it's activated.

ACCESS
GRANTED

59

Delete 23 and 36

"Welcome, you are expected. The gate is open. Take cards 12 and 39."

3

Delete 65

Ion beam arrive on the target at one third of the speed of light! The experience can start! Look at your results, take card 15.



36

You take your identity card placed on the passenger seat of your car.



7

Delete 62

You find a dewar with liquid nitrogen. The temperature of this liquid is less than -196 degrees Celsius.

44

52

You are in front of the cyclotron. It accelerates the ions produced by a source to increase their energy.

27

Delete 25, 28 and 55

Experimental set-up is lined up and ready to receive the beam. Do you have permission to start cyclotrons?







41

Delete this card

Your dosimeter is not activated!
You can't enter inside the cyclotron enclosure.



62

You find a part of the periodic table of elements, also known as Mendeleev's table.



18

You need a badge to access inside the BNI (Basic Nuclear Installation).



11

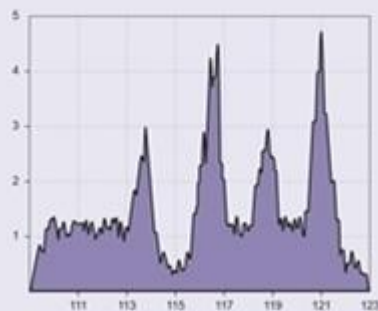
A dosimeter reader is located in the entrance seal, next to the turnstile.



30

Delete 1, 18 and 59

You pass the turnstile and take a map of the facility.



15

Experiment has produced some data. Evaluate the achieved results.



51

Delete this card

The Badge cannot activate the dosimeter.

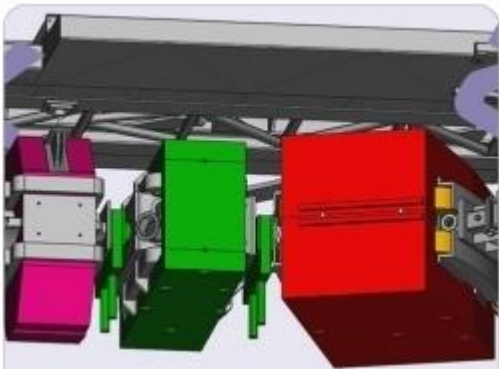


38

Delete 4 and 34

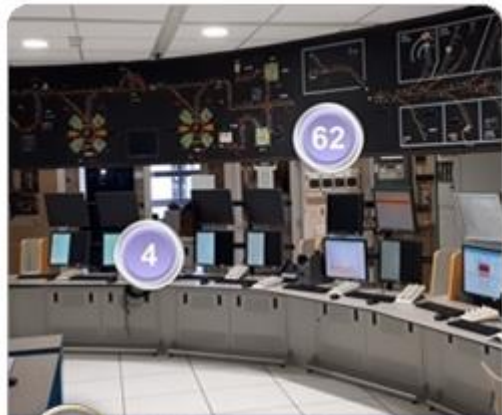
You have the permission to start the cyclotrons.
Is the experimental set-up in the experiment hall ready?





55

The VAMOS spectrometer enables the separation of the elements, produces by the reaction between the beam and the target, in order to classify them.



58

The control room is used to guide the facility, all the beams and equipment set-ups are made from it.



4

To start the cyclotrons, you need the access validation key. First check that there is nobody inside the cyclotron area, then get the key.



31

Congratulations! Your experiment has allowed you to discover a new element, Normandium! Thanks to your discovery, you get the Nobel Prize in Physics!



23

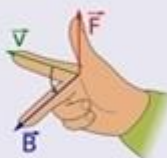
The gatekeeper stops you : "You can't enter in this area. May I see your papers please ?"

LORENTZ FORCE

A particle of charge q moving with a velocity v in a magnetic field B experiences a magnetic force called Lorentz force, given by:

$$\vec{f}_m = q\vec{v} \wedge \vec{B}$$

Where:
 q is the charge [C]
 v is the velocity of the charge [m/s]
 B is the intensity of the magnetic field



USE THE 3 FINGERS RULE OF THE RIGHT HAND TO ADJUST THE CYCLOTRON

65

Delete 27, 30, 38, 47 and 58

Cyclotron uses the combination of electric and magnetic force on a point charge in order to deliver a beam of accelerated particles.



44

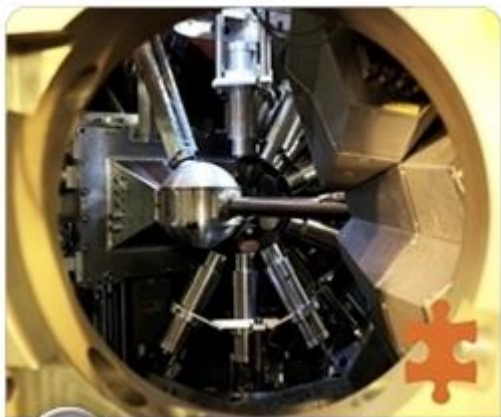
Buttons are scattered around the enclosure. Press the buttons in order to validate that there is nobody around the cyclotron.



12

In exchange of your identity card, the guard gives you an entry pass.





21

The AGATA detector needs to be cooled by liquid nitrogen (N) to be operated.



34

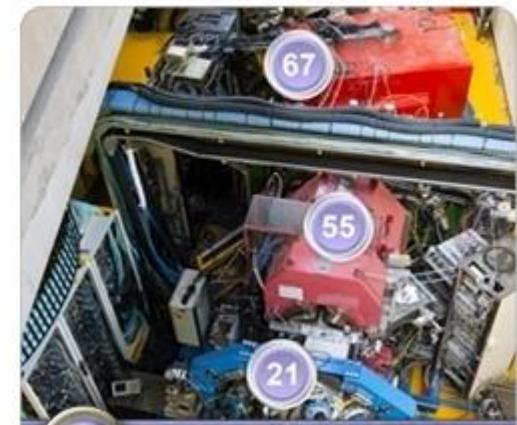
Delete 2, 44 and 52

You have checked around the cyclotron and there is no one there. You can close the room. You get the access validation key.



2

You are in front of the access door to the cyclotron enclosure. Before entering, do you have your dosimeter?



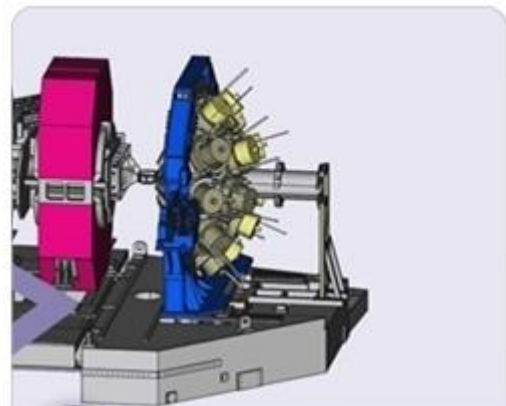
47

This is the experimental hall where you will carry out your experiment. You can see the AGATA detector (21), the VAMOS spectrometer (55) and the drift chamber detector (67).



39

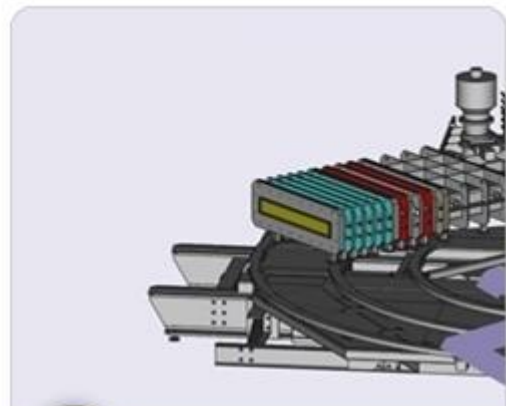
The guard gives you an active dosimeter intended to measure the radioactive dose received by a person potentially exposed to ionizing radiation.



28

Delete 7 and 21

AGATA detector is ready. It measures the gamma radiation resulting from the reaction of the ion beam with the target.



25

Delete 67

The pressure of isobutane is adjusted in the drift chamber. Detector is ready.



14

Delete this card

It's not the nitrogen atomic number. A periodic table may help you.





67

You need to gradually adjust the gas pressure in the drift chamber. What is the final pressure in the detector?



54

Delete this card

You flash your identity card in front of the turnstile reader, but nothing happens.



1

Welcome to GANIL!
You park your car and see the guardhouse and an access turnstile.

SOME CARDS HAVE A "PUZZLE" SYMBOL.



You can only add a purple puzzle card with an orange puzzle card. The result gives you the number of the next card.

Card number

5

Work together and have fun:

- Seeking the cards must be done by several players
- Read the texts carefully and keep the communication open
- Don't forget to discard while playing

