

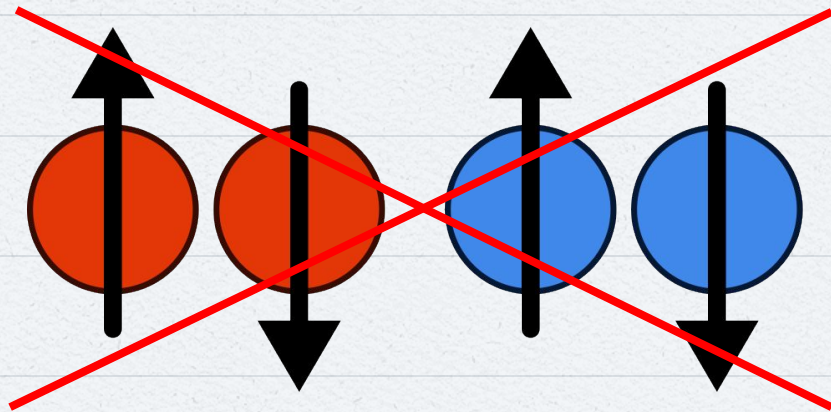
MY FIRST YEAR AS A PHD STUDENT

Hugo Jacob - Pôle nucléaire

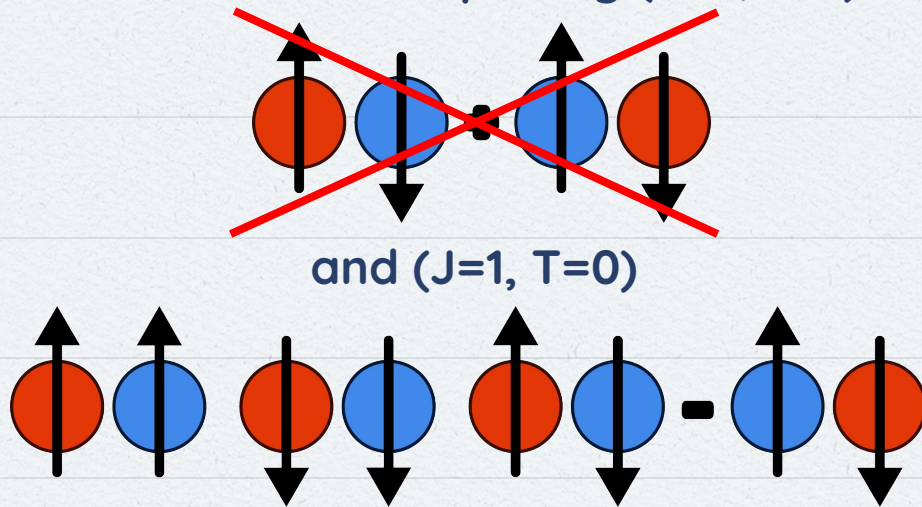
1. NUCLEAR STRUCTURE, REACTIONS AND PAIRING

Proton-neutron pairing ($J=0$, $T=1$)

Neutron-neutron

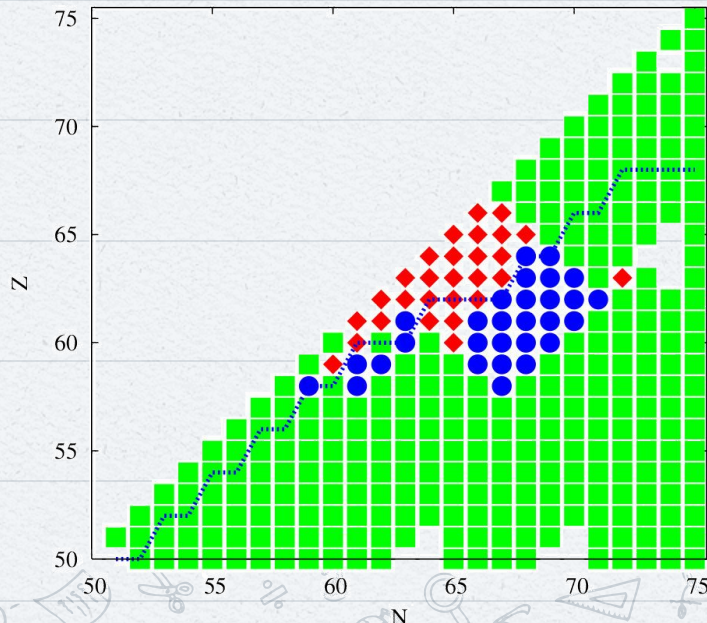


Proton-neutron pairing ($J=0$, $T=1$)



THEORETICAL PREDICTIONS

Pairing strengths



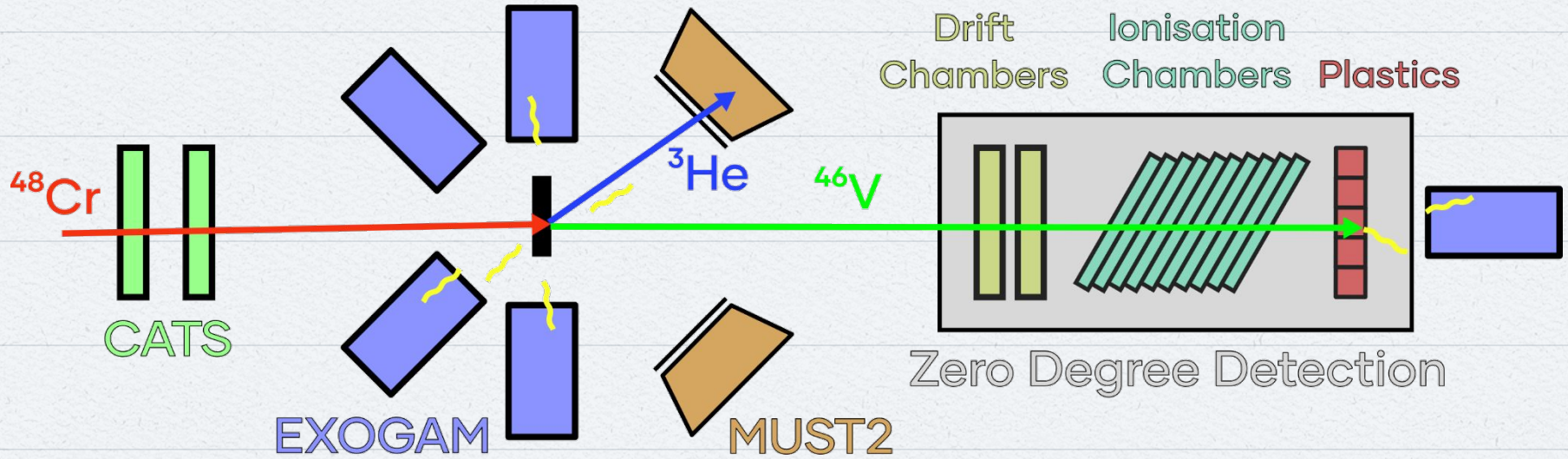
HFB Hamiltonian

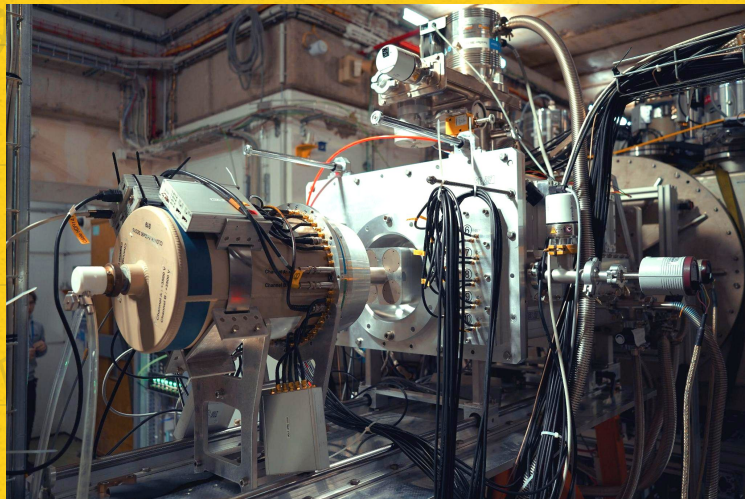
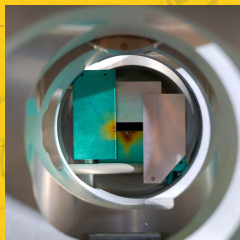
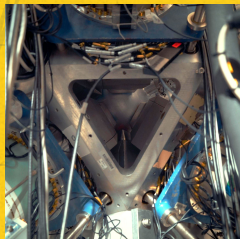
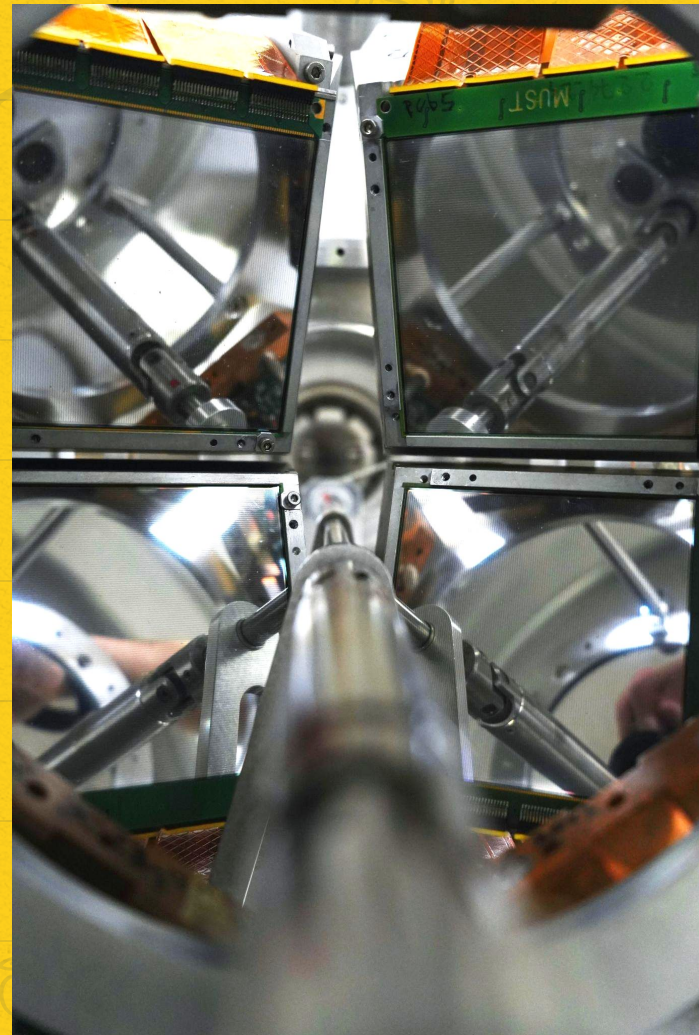
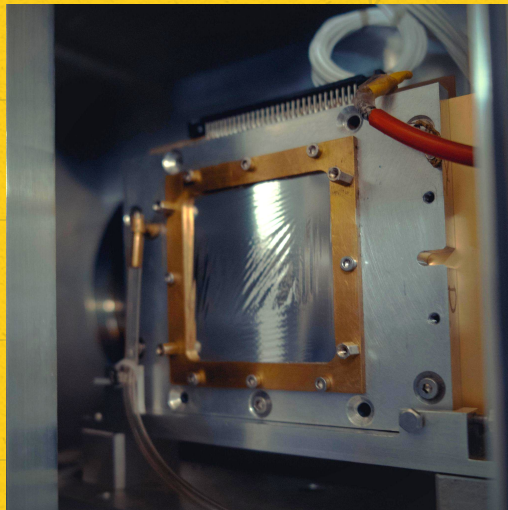
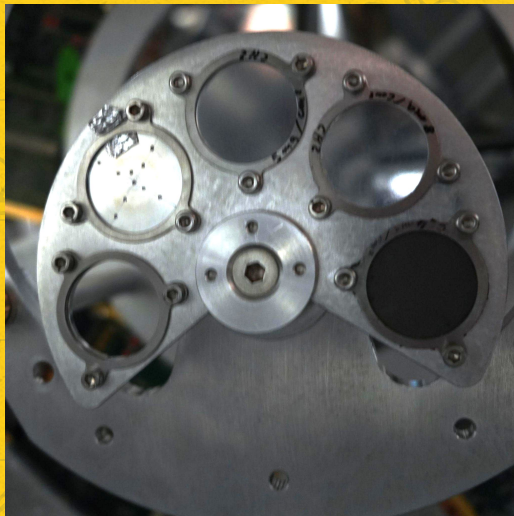
$$H = \sum_i \langle i | H_{sp} | j \rangle a_i^\dagger a_j + \sum_{i>j, k>l} \langle ij | v | kl \rangle a_i^\dagger a_j^\dagger a_k a_l$$

Single particle
Energy

Pairing interaction

EXPERIMENTAL SETUP



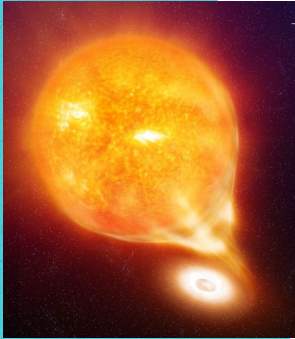


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MY EXPERIMENTS MAP

USA, Michigan State University, Facility for Rare Isotope Beams

Studying ^{26}Al abundance in the universe



France, Caen, Grand Accélérateur National d'Ions Lourds

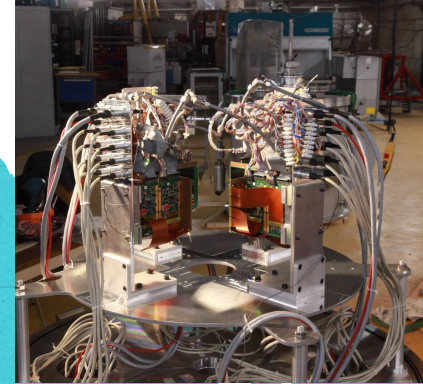
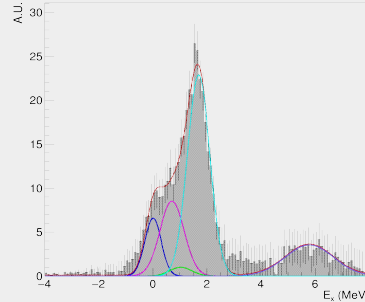
2 nuclear structure experiments



Switzerland, CERN, ISOLDE

Double alpha-decay of heavy isotopes

$^{68}\text{Ni}(p,d)^{67}\text{Ni}$ Excitation function



3. SCHOOLS/CONFERENCES

Ganil Community Meeting

Conference about nuclear physics and future perspectives in GANIL.

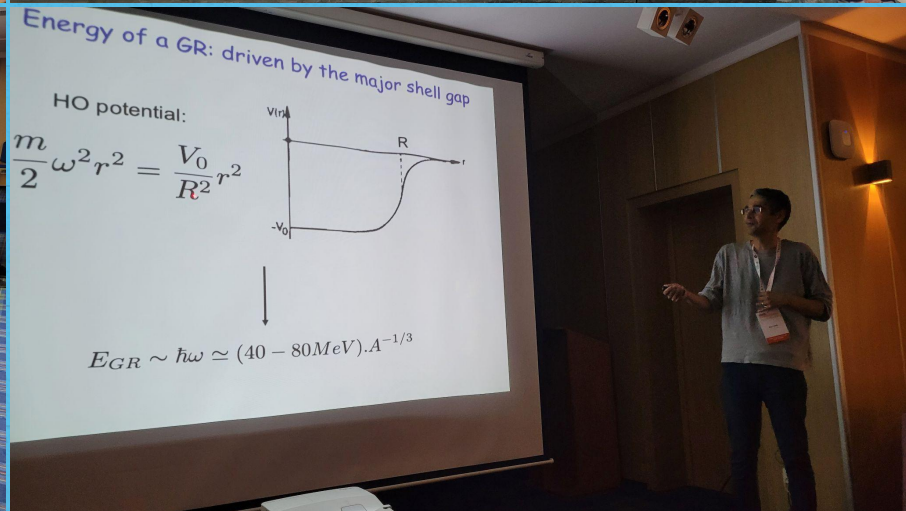
October 2022, Caen

Euroschool on Exotic Beams

Summer school covering the main topics of nuclear physics done with exotic beams:

- ✗ Nuclear structure
- ✗ Reactions
- ✗ Astrophysics
- ✗ Lasers

August 2023, Sinaia, Romania



4.

OTHER STUFF



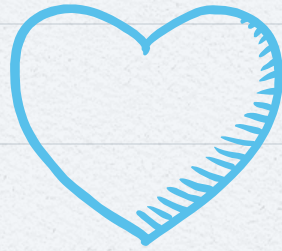
Teaching tutorials

Physics tutorials in Paris-Saclay University (1st and 2nd year):

- ✗ Mechanics
- ✗ Electromagnetism
- ✗ Calculus

NPTOOL software

Contributing to open-access software for nuclear physics simulations and analysis.



THANKS!

Any questions?