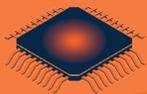




Applications



Space
Electronics
Avionics
Automotive



ALTO

Accélérateur Linéaire et Tandem à Orsay



CONTACT FOR ALL SERVICES

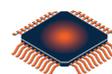
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SCAN ME

THE RADIATION TEST FACILITY



VARIOUS BEAMS FOR RADIATION TEST

Control and acquisition room



Proton and ion irradiation chamber



Neutron production area



Target preparation / dosimetry & contamination analysis



MAIN CHARACTERISTICS OF ALTO BEAMS

Beams	Energy	Maximum Flux	Environment test	Irradiated Surface
Protons	20 keV - 30 MeV	10^{12} p/(s.cm ²)	In air	Irradiated surface from 20 x 20 mm ² up to 30 x 30 cm ²
Electrons	1 - 50 MeV	10^{12} e/(s.cm ²)	-170°C to +200°C Under vacuum	
Ions	1 - 300 MeV	10^{12} ions/(s.cm ²)	Under gas pressure	
Neutrons	0.5 - 8 MeV	10^8 n/s/sr	In air	Up to 10 x 10 cm ²

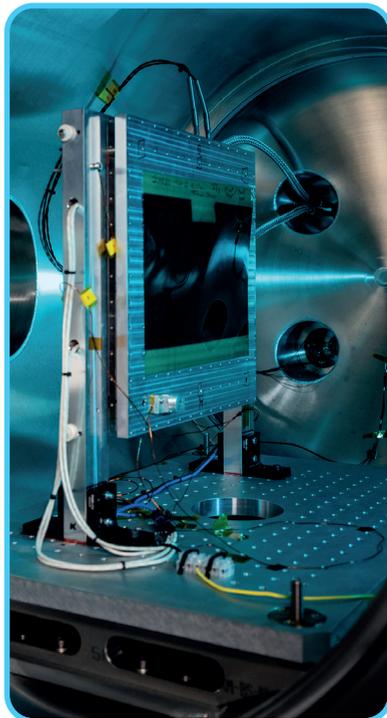
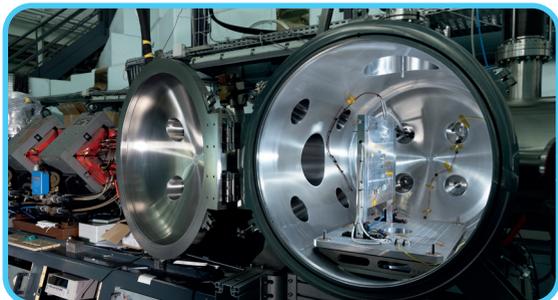
ADDITIONAL FEATURES

- Real-time flux measurement
- Scanning beam frequency: 500Hz
- Beam size diameter: 2-300 mm
- Beam homogeneity > 90%
- Flux change over time: 10 mn
- Beam control: on/off
- All connector types for data acquisition
- Continuous and pulsed beams
- Beam energy precision $\leq 10^{-5}$
- Beam energy stability $\leq 10^{-4}$
- E change over, approx. 30 mn
- Possibility of temperature cycling under vacuum from -170°C to 210°C with variable durations (with or without beams exposure)

ALTO

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PROTON AND ION BEAMS



New and specific chamber

- From protons to gold beams
- Light ion energy from 1 MeV/u to 10 MeV/u
- Motorized target support
- Several targets can be irradiated at ones
- Target temperature from -170 to 200 °C
- All connector types for data acquisition
- Beam scanning system
- Medium and low ion energy/u
- Stable and accurate low E and flux

Ion	Energie (MeV)	LET [MeV cm ² /mg]	RANGE (μm)
Protons	30	1.47E-02	4.94
⁴ He	43	1.321E-02	8.021
¹² C	100	1.431	18.74
¹⁶ O	114	2.7773	11.76
¹⁹⁷ Au	290	78.58	25.04

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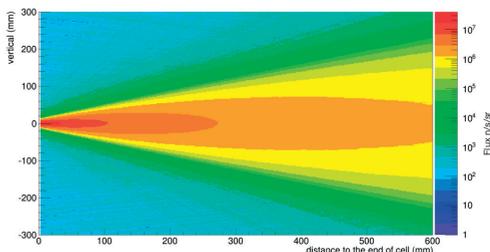
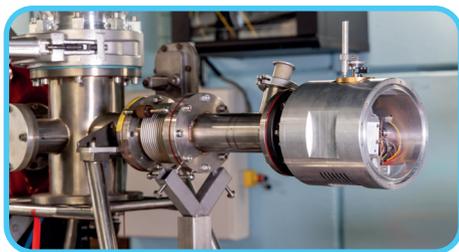
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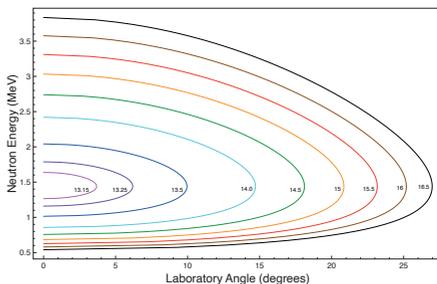
HIGH FLUX NEUTRON BEAMS

LICORNE (Lithium Inverse Cinematics **OR**say **NE**utron source) is a unique, high-flux, directional neutron source. The neutron production is achieved using the intense primary beams of ${}^7\text{Li}$, which result in secondary beams of focused neutrons in cones with opening angles between 10 and 25 degrees.



Main characteristics

- Energie 0,5 to 8 MeV
- Flux/fluence up to 10^8 n/s/sr
- The beam diameter is about 10 mm
- Irradiations take place in air



Advantages of the natural directionality of neutron beam

- The target/sample can be placed close to the source
- The neutron background is exceptionally low due to the highly non-isotropic neutron emission and the large volume of the experimental zone

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SCAN ME