Scuola di Scienze & Tecnologie

Avviso di Seminario

Nuclear isomers purification via narrow-band laser ionization from radioactive ion beams at CERN, ISOLDE.

Relatore:

Simone Casci, KU Leuven

With their anomalously long lifetime, nuclear isomers unique excited states in nuclei that can give access to original research in nuclear physics and manipulation for applications in energy storage [1], timekeeping [2] and medical imaging [3]. This seminar will discuss the production of radioactive ion beams at the ISOLDE facility in CERN (Geneva, Switzerland). The isomer purification process will be explained by introducing the collinear resonance ionization technique performed at the CRIS experiment [4], together with the implementation of a decay station for measuring unique nuclear structures made accessible by isomeric decays [5]. Experimental opportunities in isomeric decay spectroscopy, which would help to test the predictive power of the nuclear shell model, will be presented through the example of neutron-rich Zn isotopes [6].

References:

[1] E. Hartouni, AIP Conference Proceedings. 1103. 10.1063/1.3115557 (2009).

[2] L. Von der Wense, B. Seiferle, P. Thirolf. Measurement Techniques. 60. 10.1007/s11018-018-1337-1 (2018).

[3] M. Jensen, Eur. Phys. J. Spec. Top. 233, 1225–1229 (2024).

[4] K. Flanagan, Nuclear Physics News, 23(2), 24–26 (2013).

[5] K.M. Lynch, T.E. Cocolios, Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Vol. 844 (2017).

[6] T. E. Cocolios, X. F. Yang, INTC addendum INTC-P-579-ADD-1, CERN (2024).

Tutti gli interessati sono invitati a partecipare

Lunedì 23 Giugno, ore 14:30

Aula E - Edificio di Fisica