





THE NEW PULSED NEUTRON BEAM FACILITY AT CNA (SPAIN)

Miguel Macías Martínez

PhD of Physics Sciences and Tecnologies Directors: Javier Praena & Begoña Fernández Martínez







CNA presentation CNA as neutron facility : 2. Motivations & Tandem description CNA as neutron time-of-flight facility: 3 Upgrade description & First tests TOF technique, Acquisition system & First 4.

measures



CNA PRESENTATION

Location & Facilities









CNA PRESENTATION



AMN







Motivations & Tandem description













CrossMark

MOTIVATIONS



Soft error rate comparison of 6T and 8T SRAM ICs using mono-energetic proton and neutron irradiation sources

D. Malagón ^{a,*}, S.A. Bota ^a, G. Torrens ^a, X. Gili ^a, J. Praena ^{c,d}, B. Fernández ^c, M. Macías ^{b,c}, J.M. Quesada ^b, Carlos Guerrero Sanchez ^b, M.C. Jiménez-Ramos ^c, J. García López ^{b,c}, J.L. Merino ^a, J. Segura ^a

Dept. de Física. Grupo de Sistemas Electrónicos, Universitat Illes Balears, Palma de Mallorca, Spain Dpio, Física Atómica, Molexular y Nuclear, Universidad de Sevilla, Sevilla, Spain Centro Nacional de Aceleradores (Universidad de Sevilla, Junta de Andalacía, CSC), Sevil a, Spain Dato, Física Atómica, Molexuler y Nuclear. Universidad de Sevilla, Semada, Spain Dato, Réisa Atómica, Molexuler y Nuclear.







MOTIVATIONS



MACS of Ta181, ¹⁵⁹Tb and ¹⁹⁷Au

J. Praena et al., NIM A, 2013-J. Praena et al., NDS, 120 (2014) 205-207. P. Jiménez et al., PoS (NIC XIII) 057 (2015). M. Macías, TFM (Máster Física Nuclear) 2015







MOTIVATIONS



Using a Tandem Pelletron accelerator to produce a thermal neutron beam for detector testing purposes

L. Irazola ^{a,b,*}, J. Praena ^{c,d}, B. Fernández ^c, M. Macías ^c, R. Bedogni ^e, J.A. Terrón ^{b,a}, B. Sánchez-Nieto ^f, F. Arias de Saavedra ^d, I. Porras ^d, F. Sánchez-Doblado ^{a,b}















Upgrade description & First tests







CNA AS N TOF FACILITY



17

CNA AS N TOF FACILITY





WIEN FILTER

3 MV PELLETRON

BUNCHER

CHOPPER

ION SOURCE















CNA AS N TOF FACILITY

















TOF TECHNIQUE, DAQ R FIRST MEASURES

TOF TECHNIQUE



Neutron energy by <u>Time-Of-Flight</u> (TOF)

$$E_n = \frac{1}{2}m_h v_n^2 = \frac{1}{2}m_h \left(\frac{L}{t}\right)^2$$





FIRST MEASURES





PHYSICAL REVIEW C

VOLUME 37, NUMBER 2

FEBRUARY 1988

Neutron capture cross section of ¹⁹⁷Au: A standard for stellar nucleosynthesis

W. Ratynski* and F. Käppeler Kernforschungszentrum Karlsruhe, Institut für Kernphysik, D-7500 Karlsruhe, Federal Republic of Germany (Received 19 October 1987)



33







FIRST MEASURES







CNA as neutron facility: Continuous beam -->Integral experiments CNA as neutron time-of-flight facility: Pulsed beam -->Differential measures First results in agreement with R&K spectrum





THANKS!

You can find me at the CNA, Seville (Spain) mmacias4@us.es







Universidad de Granada