

Neutron cross sections: Experimental Activities in Europe

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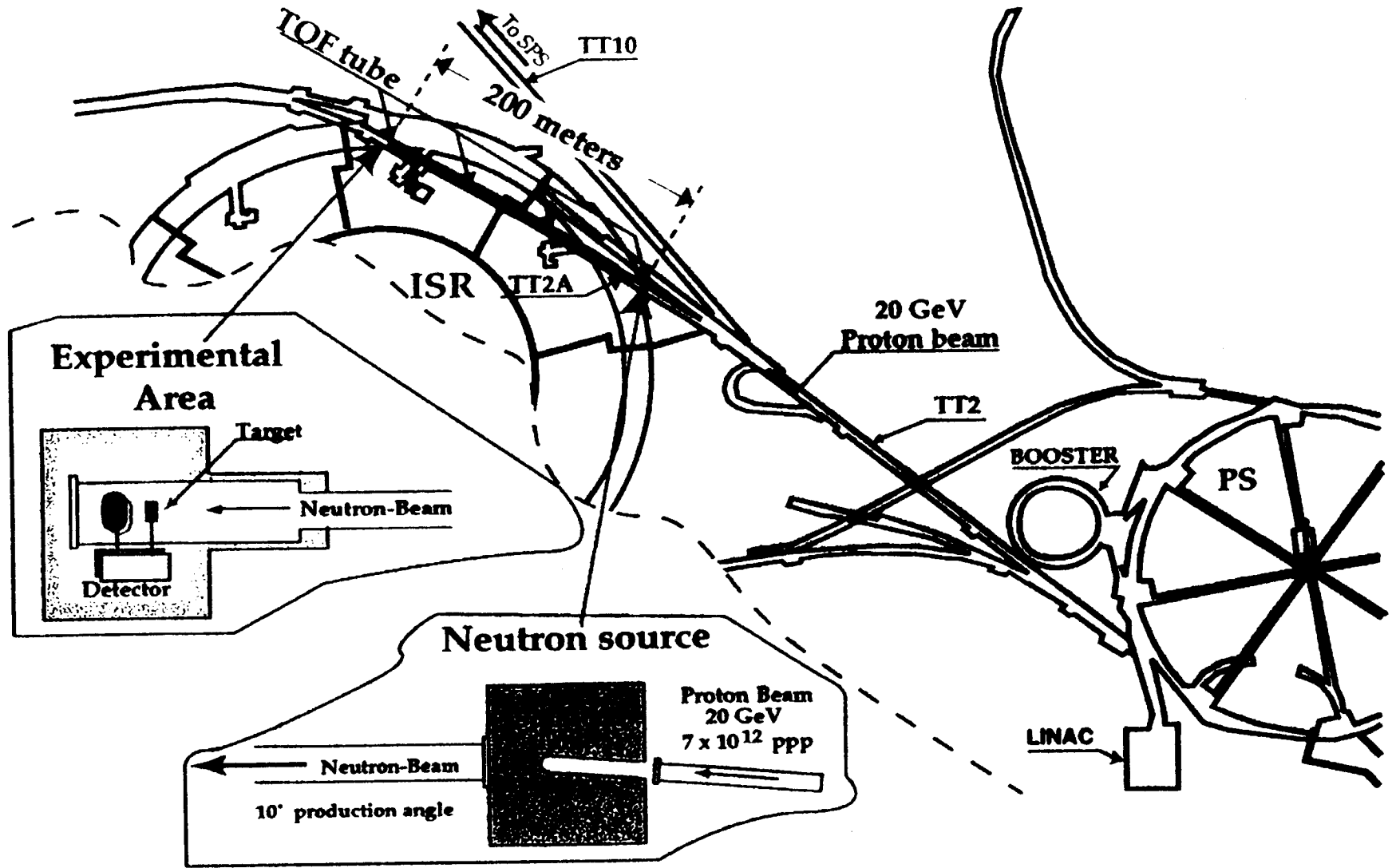
The logo for the International Reference Material Centre (IRMM) is located in the bottom right corner. It consists of the letters 'irmm' in a stylized, lowercase, cursive font. The 'i' and 'r' are connected, and the 'm's are also connected, with a horizontal line extending from the end of the second 'm'.

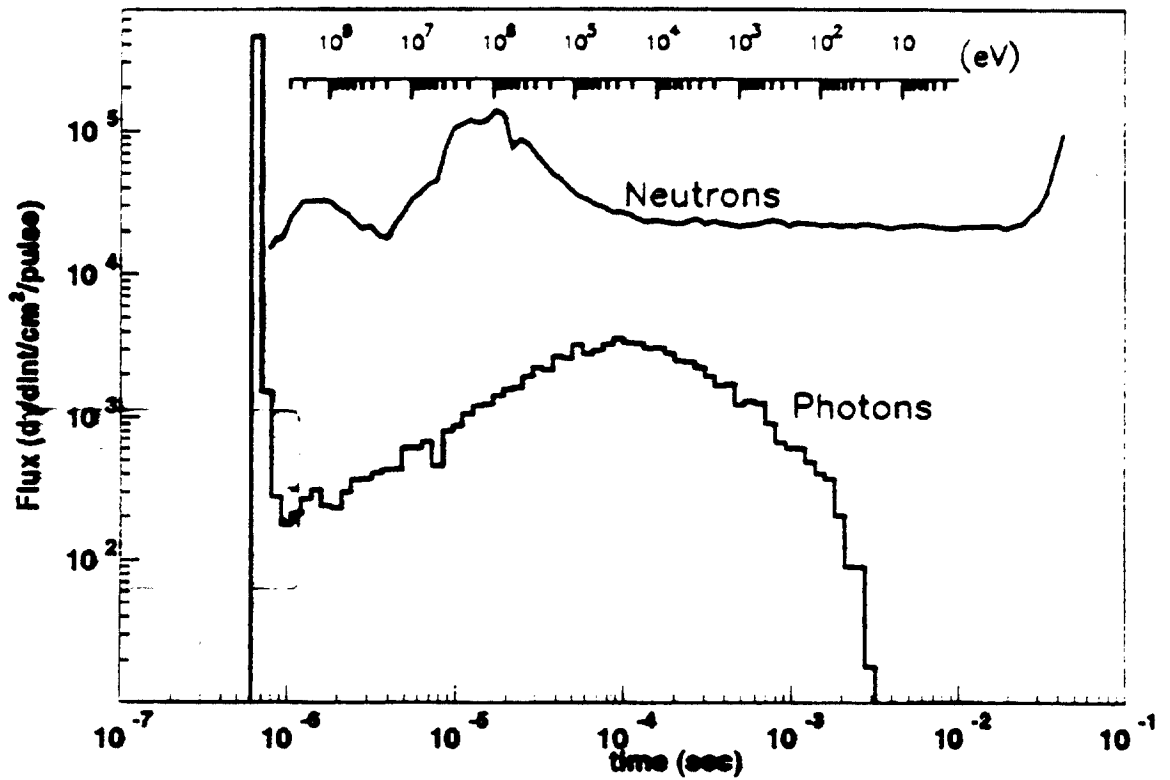
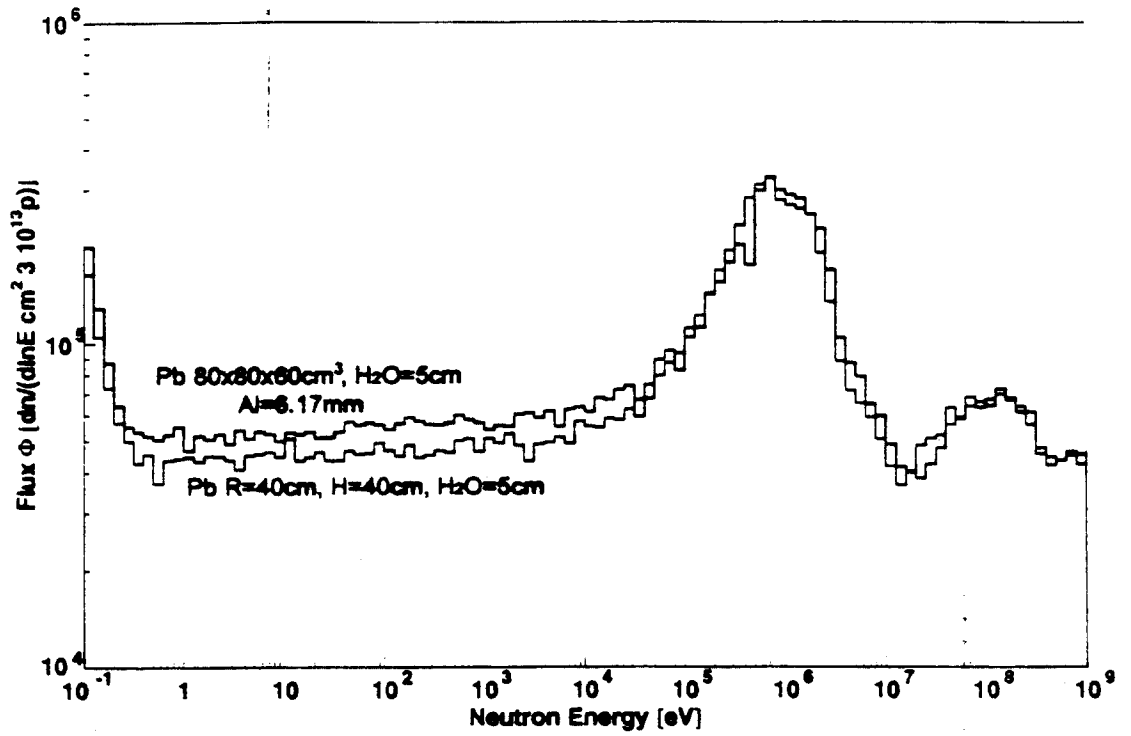
neutron cross sections for

- ADS
- transmutation
- new reactor concepts

- n_TOF collaboration
- GEDEON
- Networks
- examples from IRMM

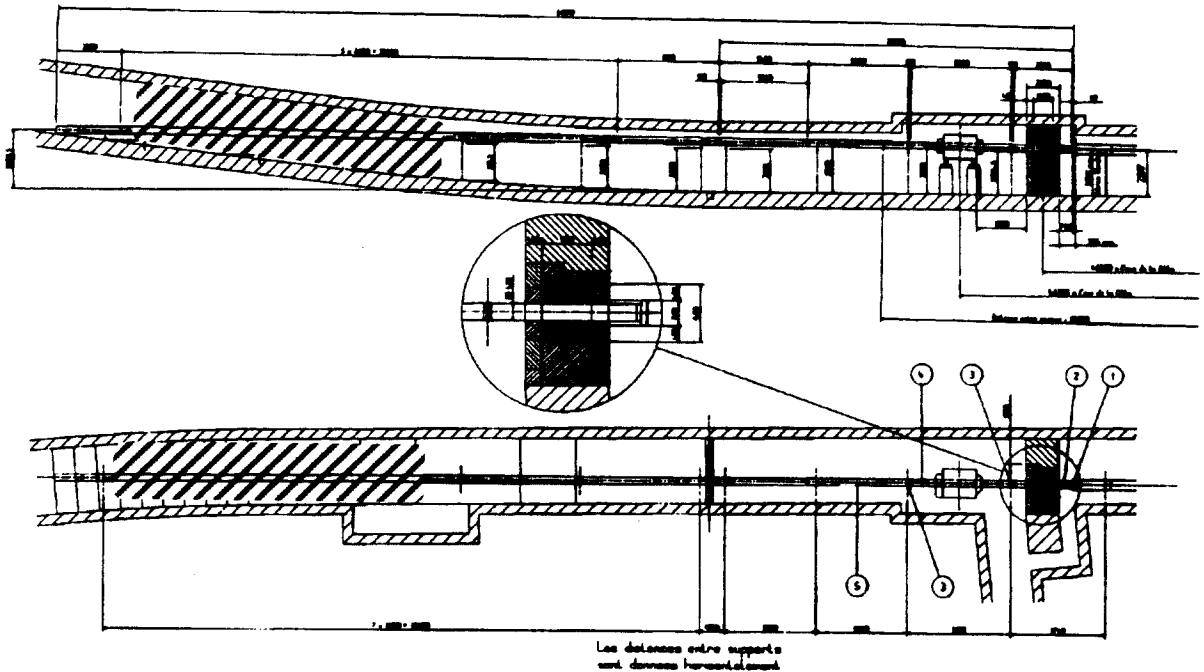
irmm





irm
m

Experimental area



183 m to target

detectors:

C_6D_6 (CEA Saclay)

C_6D_6 (FZ Karlsruhe)

PPAC (IPN Orsay)

micromegas (CENBG, CEA Saclay)

planar Ge (IReS Strasbourg)

BaF_2 (FZ Karlsruhe)

Si (INFN, CERN)

BF_3 (CERN)

BC702 (CERN)

itm

GEDEON



Gestion des Dechets par des Options Nouvelles *New Options for Nuclear Waste Management*

About 100 scientists
from CEA, CNRS, EDF, FRAMATOME

some recent experiments:

- **Louvain la Neuve:**

63 MeV p on Pb

- **SATURNE:**

0.8-1.6 GeV p on Al, Fe, Zr, W, Pb, Th

- **TSL:**

(n,ch.p.) with 100 MeV n

- **GSI:**

1 GeV/A Pb on H

irm

PECO

Pays d'Europe Centrale et Orientale

Bulgaria

Republic of Cyprus

Czech Republic

Estonia

Hungary

Latvia

Lithuania

Malta

Poland

Romania

Slovakia

Slovenia

PECO collaborations at IRMM: 26, in nuclear field 5:

Institute for Nuclear Research and Nuclear Energy

Prof. Dr. Natalia Janeva, Dr. I. Ruskov, Dr. I. Sirakov,

Dr. V. Semkova

Sofia, BULGARIA

University of Debrecen

Dr. S. Sudár, Dr. F. Cserpak and Dr. L. Olah

Debrecen, HUNGARY

National Institute for Nuclear Physics and Engineering

Dr. Vlad Avrigeanu, Dr. Marilena Avrigeanu, Tudor Glodariu,

Bucharest, ROMANIA

University of Bucharest

Prof. Dr. G. Vladuca, Dr. A. Tudora,

Bucharest, ROMANIA

Charles University, Rez

Prof. Frantisek. Becvar,

Institute of Nuclear Physics, CZECH REPUBLIC

The logo for IRMM (International Reference Material) is located in the bottom right corner. It consists of the letters 'IRMM' in a stylized, cursive, handwritten font. The 'I' and 'R' are connected, and the 'M' has a distinctive shape with a loop at the bottom.

Some examples from IRMM

Expts. at GELINA

Doppler broadening of neutron resonances:

U, UO₂, Hf, PuO₂ (20-300 K, up to 3000 K?)

data for transmutation studies:

²³⁷Np, ⁹⁹Tc, ¹²⁹I (collab. CEA Saclay)

Th fuel cycle:

²³⁴U(n,f), ²³⁶U(n,f)

Expts. at Van de Graaff

Activation cross sections

¹⁰B(n,α) branching ratio α_0 / α_1

²³⁸U(n,f) mass- and kinetic energy distrib.

²³³Pa(n,f)

Future Developments

Neutron induced charged particle x-sections

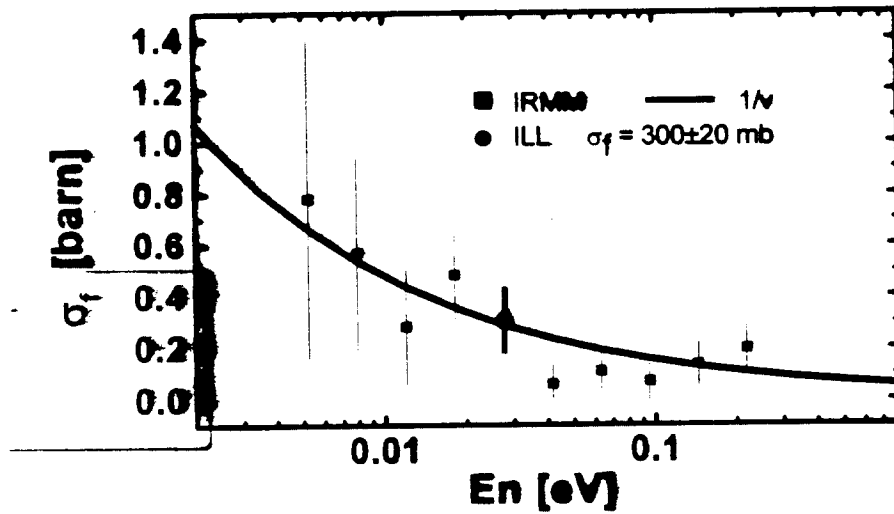
The logo for IRMM (International Reactor Material Monitoring) is located in the bottom right corner. It consists of the letters 'i', 'r', 'm', and 'm' in a stylized, lowercase, cursive font. The 'i' and 'r' are connected, and the two 'm's are stacked vertically.

$^{234,236}\text{U}(n,f)$

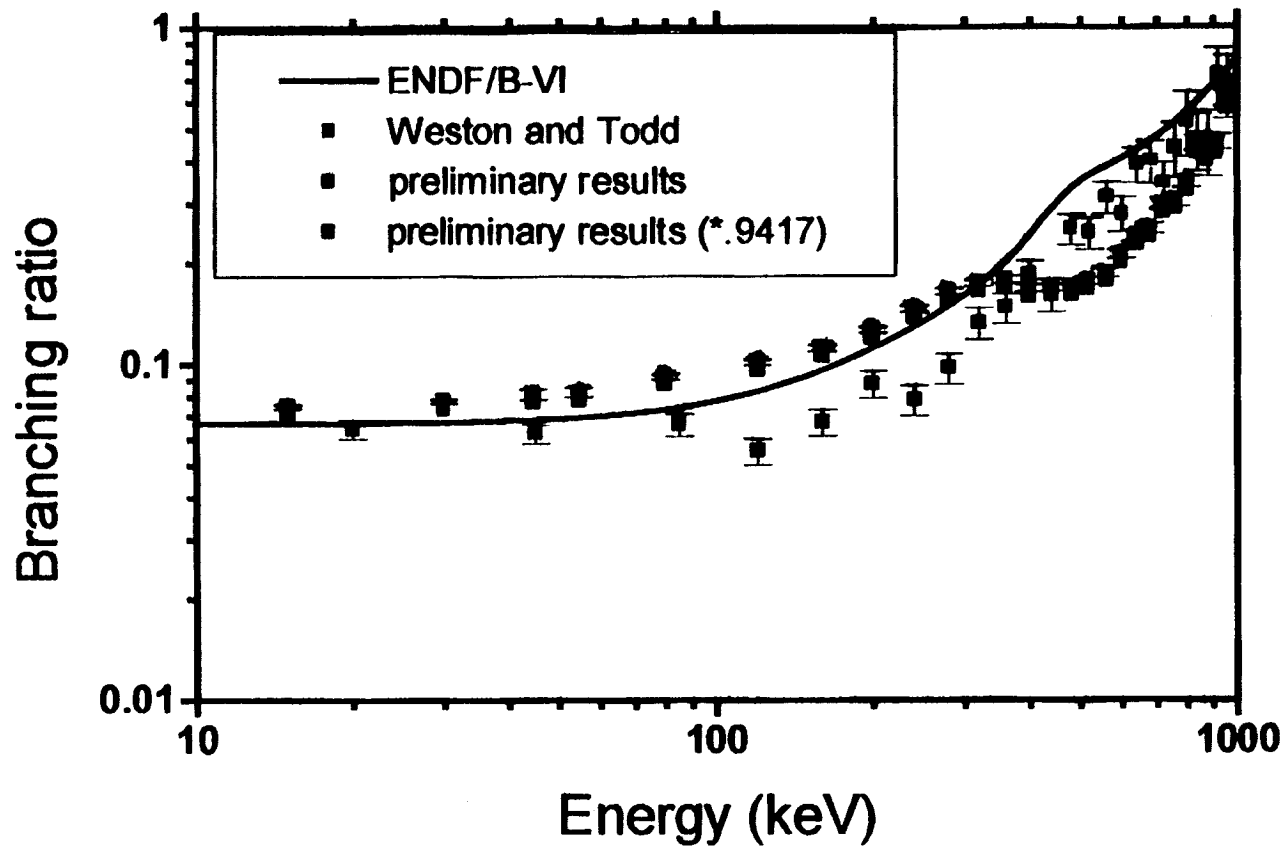
Thermal fission cross section [mb]

Isotope	JEF-2.2	ENDF/B6	JENDL-3.2	This work
^{234}U	465	465	6.2	300 ± 20
^{236}U	46.9	47.2	61.3	0.3 ± 1

$^{234}\text{U}(n,f)$



irm



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