JAPAN ATOMIC ENERGY RESEARCH INSTITUTE

TOKAI RESEARCH ESTABLISHMENT

TOKAI-MURA, NAKA-GUN, IBARAKI-KEN

Nuclear data measuring activities in Japan

November, 1963

JAERI reactor-neutron experiment group

At the Japan Atomic Energy Research Institute (JAERI), Y. Ohno and his collaborators are measuring total cross sections of some rare earth elements in the energy region of cold, thermal, and epithermal neutrons, using their crystal spectrometer and mechanical monochromator.

They are considering to measure cross sections of Pu-239, and also cross sections of some nuclides which are expected to have negative resonances.

JAERI Linac group

At the Japan Atomic Energy Research Institute, H. Takekoshi and his collaborators are measuring total cross sections of natural W in the energy range of 10 ~ 10,000 eV.

They will extend their measurements to medium weight nuclei.

JAERI Van de Graaff accelerators group

At the Japan Atomic Energy Research Institute, K. Tsukada, K. Nishimura and his collaborators have measured total cross sections, differential cross sections of elastic and inelastic scatterings, and excitation of gamma rays by inelastic scattering, using 2- and 5.5-MV Van de Graaff accelerators.

Their programmes in progress are as follows:

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(1) Measurement of $\sigma(n,n'\gamma)$

Incident neutron energy : From threshold to 2 MeV.

Elements : Fe, Co, Ni, Cu, Zn, Mo, Ag, Cd, and Sn.

Method : Measurement of de-excitation gamma rays by the ring-geometry method.

(2) Measurement of spectra of inellastically-scattered neutrons.

Incident neutron energy : $5 \sim 3.5$ MeV.

Elements : Co, In, Ag, Ta, and Au.

Method : Time-of-flight method with the Mobley-type bunching system.

(3) Measurement of fast neutron total cross sections.

Incident neutron energy : $4 \sim 5$ MeV.

Elements : Al, Si, S, Ti, Cr, Mn, Fe, Ni, Cu, Zn, Mo, Sb, Ag, Cd, W, and Pb.

Method : Self-indication method.

Their 5.5 MV Van de Graaff accelerator is under repair. They will be able to resume their measuring activities by the summer of 1964.

ETL group

At the Electrotechnical Laboratory, Ministry of International Trade and Industry, O. Yura and his collaborators are now engaged in the measurement of total cross sections of $T(p,n)He^3$ and $Be^9(p,n)B^9$ reactions at the threshold region, absolute determination of fast neutron flux density, and measurement of the cross section of the $Si^{28}(n,\alpha)Mg^{25}$ and $Si^{28}(n,p)Al^{28}$ reactions, using an electrostatic accelerator.

Their future programme consists of the absolute determination of fast neutron flux and measurement of some (n,p) and (n,α) reaction cross sections.

Kyushu Univ. (Eng.) group

At the Department of Nuclear Engineering, Kyushu Univ., M. Sonoda and his collaborators have measured the angular distributions of fragments in fission of U and Th induced by 14-MeV neutrons, and $Ca^{40}(n,p)K^{40}$ reaction.

Their programme in progress consists of the measurements of elastic and inelastic scattering of neutrons by the time-of-flight method, and neutron-induced fission.

Konan Univ. group

At the Konan University, measurements have been made on the reactions and scatterings induced with 14-MeV neutrons by using a Cockcroft-Walton accelerator.

K. Kasa and his collaborators are now investigating (n,d) reactions. Their future programme will be the measurements of elastic and inelastic scattering of 14-MeV neutrons, and of the (n,2n), (n,p), and (n,α) cross sections by means of the activation method.

Kyoto Univ. (Science) group

At the Department of Physics, Kyoto University, investigations on the reactions induced with 14-MeV neutrons have been made by using Cockcroft-Walton accelerator, and will be continued.