

EXPERIMENTS WITH A 400 KeV VAN DE GRAAFF USED AS A PULSED NEUTRON SOURCE

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I - INTRODUCTION

The study of thermal neutron diffusion by the pulsed neutron source method, permits to obtain directly two parameters (absorption cross-section Σ_a and diffusion length L) whereas a single one (L) is obtained in stationary processes. Besides, the pulsed neutron source method, generally permits the use of reduced dimensions of systems, a very interesting aspect from a practical point of view.

For the development and utilization of the non-stationary techniques on the study of moderators and multipliers media, the Reactor Physics Division of the I.E.A. has an electrostatic accelerator model PN-400 of the High Voltage Engineering Corporation. Since the beginning, the Van de Graaff has been used to measure the parameters of thermal neutrons diffusion in the water.

For its intrinsic importance and because there are more than ten works already published by groups of all the world, this experiment was considered basic for the study and development of the method.

Considering the results of the experiments done in other centers, the precision of the results here presented is beneath expectation.

However, it was possible to accomplish a survey of the problems connected to technique, not only from the experimental view-point, but also in relation to the data analysis.

