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APPLICATION OF THE DNFM FISSION CHAMBER FLUCTUATION CHANNEL CALIBRATION METHOD *)

Dzhurik A.S., Obudovsky S.Yu., Vorobev V.A., Kashchuk Yu.A., Kormilitsyn T.M.

Institution "Project Center ITER", <u>a.dzhurik@iterrf.ru</u>

Diagnostic "Divertor neutron flux monitor" (DNFM) is part of ITER neutron diagnostics complex and designed for total neutron flux and fusion power measurements. Diagnostic DNFM includes three identical subsystems. Each subsystem includes two Fission Chambers in a three-section design.

Three measurements channels (counting, fluctuation, current) are realized in each subsystem for FC signals processing in I&C DNFM. Application of the fluctuation method to measure count rate assumes knowledge of the proportionality coefficient value between the measured value of FC signal dispersion and desired count rate value. Proportionality coefficient is determined as result of calibration. In this work, the calibration method described in the article [1] was used.

The purpose of the work was to demonstrate the possibility of using calibration method in I&C DNFM. The report presents measurement results obtained by calibrating the fluctuation channel. The measurements were carried out on the neutron generator NG-24M [2]. On the figure below shows a comparison of the neutron generator monitor readings and count rates (fluctuation and counting methods) obtained when the FC is located at a distance of 10 cm from the generator target. The ratio of the FC fluctuation channel count rate to monitor readings remained constant (with a 1% deviation) with increasing generator accelerating voltage.



Figure 1: Generator monitor readings and FC count rates

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^{*) &}lt;u>abstracts of this report in Russian</u>