DESIGN OPTIMIZATION OF ITER VNC DIAMOND DETECTOR [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2020.47.1.188

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The paper describes the design of the diamond detector mockup with small overall dimensions, which intended to utilize in ITER Vertical Neutron Camera (VNC) detector blocks. Diamond detector's size minimization is a significant optimization stage of ITER VNC design, which gives us an improvement of VNC detector blocks metrological characteristics. The paper also represents the first results of diamond detectors experimental test as a part of the VNC detector block, using ING-07T neutron generator.

As well as the 238U fission chamber in a composition of the VNC detector block, there are included two diamond detectors installed above the fission chamber and located coaxially one above the other. Diamond detectors design and their layout optimization allowed to reduce the axial dimension of the VNC detector block more than on 100 mm. Diamond detectors optimization together with the fission chamber design optimization allows to increase the length of VNC collimators, and with the improvement of the collimator's shape leads to signal-background ratio enhancement. Also the increase of the VNC collimators length leads to a decrease of heat loads on VNC detector blocks and facilitating their operating conditions

The work was carried out in accordance with the state contract dated December 26, 2018 «Разработка, опытное изготовление, испытание и подготовка к поставке специального оборудования в обеспечение выполнения российских обязательств по проекту ИТЭР в 2019 году».

1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVII/E/ru/IM-Khafizov.docx) [↑](#footnote-ref-1)