

Pre-delivery calibration strategy of the ITER Radial Neutron Camera

D. Marocco¹, B. Esposito¹, K. Mikszuta-Michalik²,
E. Pirovano³, A. Zimbal³

*¹Fusion and Technology for Nuclear Safety and Security Department,
ENEA, C.R. Frascati, Via E. Fermi 45, 00044 Frascati, Rome, Italy*

*²Institute of Plasma Physics and Laser Microfusion, Hery
Street 23, 01-497 Warsaw, Poland*

*³Physikalisch-Technische Bundesanstalt, Bundesallee 100,
38116 Braunschweig, Germany*

The ITER Radial Neutron Camera (RNC) will provide, through reconstruction techniques applied to the measured line-integrated neutron fluxes, the time resolved measurement of the ITER neutron and a-source profile (neutron emissivity). The RNC is composed of two subsystems, the In-Port RNC and Ex-Port RNC located, respectively, inside and outside the Plug of Equatorial Port #01.

We will review the neutron detectors (fission chambers, diamonds and scintillators) installed in the two subsystems and the different steps planned for the pre-delivery calibration of the diagnostic: calibration of individual detectors, including, as an example, the efficiency determination of the RNC fission chamber prototype, the characterisation of the RNC geometry and the evaluation of the accuracy on the neutron emissivity measurements.