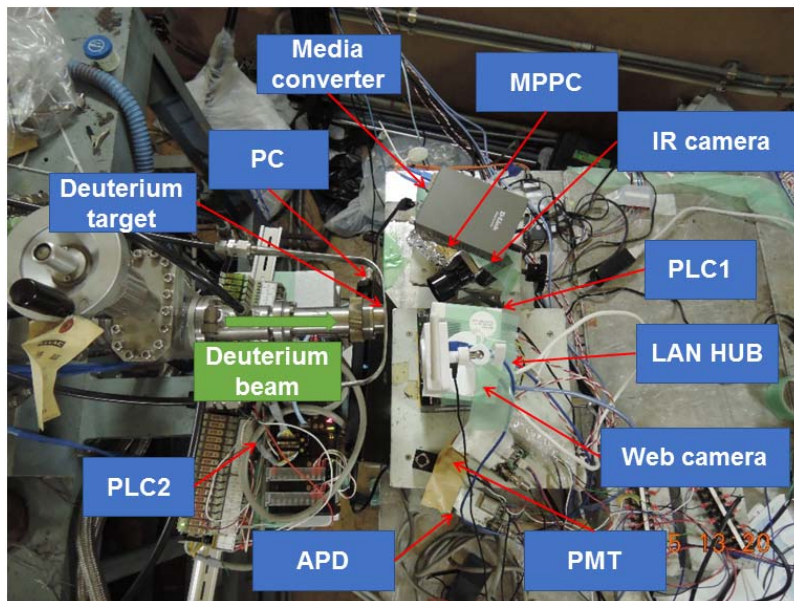


Investigation of irradiation effects on highly integrated leading edge electronic components of diagnostics and control systems for the LHD deuterium operation

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Neutron irradiation test in OKTAVIAN



Neutron rate from source $\sim 10^9$ n/s

- Neutron and gamma-ray irradiation tests on electronic component used in LHD are respectively performed.
- Transient network disconnections are observed on the PLC at neutron flux (ϕ) of $3 \times 10^6 \text{ cm}^{-2}\text{s}^{-1}$ which is two order smaller than ϕ in the torus hall and is close to the expected ϕ in the basement level of torus hall. No effect is observed at ϕ of $3 \times 10^5 \text{ cm}^{-2}\text{s}^{-1}$.
- The PLC is broken around the gamma-ray dose of 100 Gy which is slightly larger than the expected gamma-ray dose in the torus hall during LHD deuterium campaign.
- We moved PLCs as far as possible to the basement level of the torus hall and put several neutron shields for the safe operation of LHD.