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Dependence of Fast Neutron Imaging on Scintillators

Fast neutron imaging has emerged as a powerful tool for non-destructive testing, particularly in environments where traditional X-ray and thermal neutron imaging methods are limited. In this study, we investigate the feasibility of fast neutron imaging using a compact D-D neutron generator and the KSTAR tokamak as neutron sources. Various scintillators for fast neutrons were employed to evaluate their impact on image quality and detection efficiency. By comparing imaging performance across different scintillators, we analyzed their spatial resolution, signal-to-noise ratio, and neutron detection efficiency. The results demonstrate that scintillator selection significantly influences image clarity and detection sensitivity, providing crucial insights for optimizing fast neutron imaging systems for industrial and scientific applications. This study highlights the potential of fast neutron imaging in advanced diagnostics, with implications for fusion research, material analysis, and non-destructive evaluation.

Workshop topics

Applications

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