It has been researched an influence of plasma column displacement along major radius on fast ion (FI) capture efficiency and condition of FI thermalization in plasma in NBI experiments.

Basing on neutron flux measurements (Figure 1-a: $B_t=0.7$T and $I_p=155$ kA - circles, $B_t=1$T and $I_p=170$ kA - triangles) the optimal position of plasma column was found. In this position maximal value of neutron flux and the best condition of FI thermalization is achieved.

At the same time measurements of $\tau_n$ at different $\Delta R$ demonstrated a pronounced influence of $\Delta R$ at $B_t=0.7$T and $I_p=155$ kA (Figure 1-b, circles) and $B_t=1$T and $I_p=170$ kA (Figure 1-b, triangles) on FI thermalization.

Basing on spectral analysis of charge-exchange neutrals it was observed that at relatively low magnetic field ($B_t=0.7$T and $I_p=155$ kA) takes place the strong influence of $\Delta R$ on FI thermalization at $\Delta R=-2.7$ (Figure 2).

The increase in $B_t$ from 0.7 T up to 1T and $I_p$ from 155 kA up to 170kA resulted in disappearance of the dependence of the fast charge-exchange atoms spectra on plasma shift. It indicates weak influence of $\Delta R$ on FI thermalization at high magnetic field (Figure 3).