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**MHD Instabilities and Their Effects on Plasma Column Behavior in Tokamak.** PEJMAN KHORSHID, Dept. of Physics, Islamic Azad University, Mashhad branch, Iran, LONG WANG, Institute of Physics, Chinese Academy of Sciences, Beijing, China, MAHMOUD GHORANNEVISS, Plasma Physics Research Center, Islamic Azad University, Tehran, Iran — In the edge plasma of the CT-6B tokamak the poloidal rotation velocity based on MHD behavior has been studied. We found that mode number and rotation frequency of plasma column are different in angle position, so that the phase data detected from Mirnov coils array located in poloidal angle on the inner side of chamber is more than outer side which it can be because of toroidal magnetic field effects. It shows that plasma column behaves as non-Rigid body plasma. A relative correction coefficient has been suggested for optical diagnostic purposes. It is observed that when mode number achieves to  $m=2/n=1$ , plasma treats like rigid body and almost it leads to a major disruption. The results have been compared with measurements via Mach probe and Doppler shift of H-alpha line spectroscopy. In addition, during positive limiter bias application the poloidal magnetic field oscillations first decreased and then after a delay time it increased with a faster speed. With contribution of viscous force effects in the radial force balance equation for limiter biasing, in terms of the non-stationary model, it allows us to identify the understanding physics responsible for change in the Mirnov oscillations that could be related to poloidal rotation velocity and radial electric field.

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