

Abstract Submitted  
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**Equilibrium fitting analysis and propagation of magnetic fluctuations in the Multi-pulsing HIST plasmas** K. MATSUMOTO, T. HANANO, K. ITO, M. ISHIHARA, T. HIGASHI, Y. KIKUCHI, N. FUKUMOTO, M. NAGATA, University of Hyogo — The current drive by Multi-pulsing Coaxial Helicity Injection (M-CHI) has been performed on HIST in a wide range of configurations from high- $q$  ST to low- $q$  ST and spheromak generated by the utilization of the toroidal field. It is a key issue to investigate the dynamo mechanism required to maintain each configuration. To identify the detail mechanisms regarding a helicity transport from the edge to the core region, we have investigated the characteristics of magnetic field fluctuations observed in M-CHI experiments. We have fitted internal magnetic field data to a ST configuration calculated by the equilibrium code with a hollow pressure profile in order to find the sustained configurations. Fluctuation frequency is identified as about 80 kHz and it has been found to propagate from the open flux column region toward the core region. The toroidal mode  $n=0$  is dominant in the high TF coil current operation. Alfvén wave generation has been identified by evaluating its velocity as a function of plasma density or magnetic field strength. We will discuss the relationship between the Alfvén wave and helicity propagation.

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