

## Progress toward fully non-inductive operation in NSTX

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Several machine and operational upgrades have been implemented on NSTX to improve MHD stability limits and increase pulse duration. H-modes induced during the plasma current ramp increase the central safety factor and decrease the internal inductance. Reduced  $l_i$  allows stable operation with high elongation which can increase the poloidal beta and bootstrap fraction. Newly installed divertor coils now allow for high triangularity  $> 0.7$  to be achieved at high elongation  $> 2.5$ , and this enhanced plasma shaping allows operation with small ELMs at high elongation. The combination of these improvements has resulted in record discharge pulse-lengths  $> 1.5$ s in NSTX with normalized beta above 4 sustained for over 1s. In these scenarios, the peak non-inductive current fraction exceeds 70% with 60% of the current driven by the plasma pressure gradient. MHD stability, transport, and current profile evolution characteristics of these long-pulse plasmas will be described.