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## Structural Behavior of KSTAR CS Magnet during Plasma Operation

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An analysis model was developed to evaluate the axial pre-compression for the central solenoid (CS) magnet of KSTAR. The model represents the preloading relatively well in assembly, cool-down and current charging conditions. However, the model for cool-down condition needs to be modified for the accurate estimation of preloading. The smeared material properties of the CS winding pack were reevaluated. The electromagnetic forces of the coils are evaluated during plasma operation conditions like large plasma current and long pulse H-mode discharges. The structural analysis of the CS magnet is performed using the updated model and the analysis result is compared to the measured strains. The analysis methodology and the model have been consistently updated to increase the reliability of the analysis through these processes. Studies on the structural behavior of the CS magnet are expected to provide guidelines for future KSTAR operation in spite of insufficient preloading.

### Submitters Country

Republic of Korea

**Primary author:** Mr AHN, Hee-Jae (NFRI)

**Co-authors:** Mr PARK, H. K. (NFRI); Dr CHU, Y. (NFRI); Mr KIM, Y. O. (NFRI); Mr PARK, K. R. (NFRI); Dr OH, Y. K. (NFRI); Prof. KIM, Y. H. (CNU)

**Presenter:** Mr AHN, Hee-Jae (NFRI)

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