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Wed-Af-Po3.17-04 [32]: Mechanical design of the magnet mirror structure for testing Nb₃Sn sextupole coil of 45 GHz ECRIS

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The new Nb₃Sn superconducting magnet system for the fourth-generation 45 GHz ECR source is under developing in the institute of Modern Physics(IMP). A mirror structure of the Nb₃Sn sextupole testing coil based on a key and bladder technology is used for studying the coil's mechanical, thermal and quench performance under the realistic conditions. This paper describes the main components and the assembly procedures of the Mirror structure. Based on the three-dimensional finite-element mechanical model, the stress analysis for the process of assembly, cooling down, and charging is carried out. The assembly and strain measurement results of sextupole mirror structure are also introduced in this paper.

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