



Contribution ID: 43

Type: (b) Poster abstract only (one author must be in person)

Structural Optimization of Future Circular Collider Interaction Region Support Structure

Thursday, June 13, 2024 6:48 PM (1 minute)

In this poster is presented a study on the structural optimization of the support structure for the interaction region (IR) of the Future Circular Collider (FCC). The aim is to optimize the structure to reduce the mass, maintaining the stiffness needed. Finite element analysis (FEA) is used to develop a detailed numerical model considering complex geometries, material properties, and loading conditions. The study seeks to identify design improvements using optimization algorithms, such as SIMP, Generative Design and Lattice approach, to ensure the respect of requirements of the FCC IR support structure during operation.

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Session Classification: Poster session

Track Classification: Physics, Experiments and Detectors: MDI