

RELIABILITY, AVAILABILITY AND MAINTAINABILITY ANALYSIS OF THE IFMIF'S ACCELERATOR

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In this project, a Reliability, Availability and Maintainability (RAM) Analysis of the International Fusion Materials Irradiation Facility (IFMIF) accelerator is described.

The analysis for the accelerator's updated design develops from a new and independent reliability database. The database is filled with the failure rates and the repairing times of the accelerator components. These data are mainly extracted from the exploration of common components reliability data in accelerator driven systems, liquid metal technologies, fusion frameworks and specifically from other facilities operational experience.

The RAM analysis consists on a fault tree model based on the adaptation of an updated Failure Modes and Effects Analysis (FMEA). The results have been developed with different statistical analyses such as time dependency analyses, importance and sensitivity analyses, parametric analyses and uncertainty analyses in order to identify critical components and new design and maintainability strategies to improve IFMIF's availability.

The FEEL's model results and the independent database are compared with the former IFMIF's reliability reports. Although there are differences, they converge to coherent conclusions.

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