

ACCELERATOR SEMINAR

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GSI

Thursday, 22. August 2019 at 4 pm

KBW Lecture Hall

Planckstraße 1, 64291 Darmstadt

Compression and noise reduction of field maps

Errors from discretization and large data volume of field maps is a concern for beam dynamicssimulations w.r.t. achievable accuracy and to the required amount of time. High-order Singular Value Decomposition (HOSVD) has recently emerged as simple, effective, and adaptive tool to extract the essentials from multi-dimensional data. This method is on the compression and noise reduction of electromagnetic field map data with HOSVD. The method has been applied to an electric field map of a DTL cavity with 11 m in length comprising 55 rf-gaps. The original field map data of 220 MB was converted into practically noise-free data of just 20 KB. Noise was reduced by 95% as demonstrated using a cubic cavity for which the analytical field map is available.



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