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# Virtual Accelerator Laboratory: the symbolic presentation for space charge fields

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In this work by saying Virtual Accelerator we mean a set of services and tools enabling transparent execution of computational software for modeling beam dynamics in accelerators using distributed computing resources. The main use of the Virtual Accelerator is simulation of beam dynamics by different packages with the opportunity to match the and the possibility to create pipelines of tasks when the results of one processing step based on a particular software package can be sent to the input of another processing step. In the case of charged particle beams Virtual Accelerator is working as a prediction mechanism: witch analytical model should we use to exclude, may be partly , the negative effect in beam dynamics. With the help of external fields these changes can be done. To simulate the large number of particle we need distributed resources for our computations. In this paper different parallel techniques to simulate space charge effects are presented. In particular, the investigation of overall performance of the predictor-corrector method is made.

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