

**Boundary Integral Equation Approach to Time Domain Calculation of Accelerator Electromagnetic Fields\***, T. HONMA, M. ISODA, H. KAWAGUCHI, Hokkaido Univ. Div. Systems & Inf. Eng. - A boundary integral equation approach to time domain calculation of accelerator electromagnetic fields is presented. The boundary integral equation method requires us to generate meshes only on the boundaries and the Lienard-Wierthert fields can be directly treated in this method. Accordingly, this approach gives us possibilities of analytical treatment of particle smooth trajectory and the particle radiation fields. On the other hand, it is known that this approach shows us serious difficulties, which are mainly from too much storage memory & CPU time and numerical instabilities. From this point of view, this paper especially discusses some techniques of reduction of the storage memory and CPU time, taking note symmetries of the objects. To employ those techniques, short range wake field phenomena and the reaction force for the particle are simulated here. Then, calculation results are compared with those of the Finite Integration Technique (FIT).

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