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Two-Dimensional Analysis of the Relativistic Klystron and a Standing-Wave Free-Electron Laser Two-Beam Accelerator

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Publication Date

1992-06-01

Two Dimensional Analysis of the Relativistic Klystron and a Standing-Wave Free-Electron Laser Two-Beam Accelerator*,

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Recent analysis of the Two-Beam Accelerator, by Wurtele, Whittum and Sessler¹ has shown that the transfer cavities, be it in the relativistic klystron version (RK/TBA) or in the standing-wave free-electron laser version (SWFEL/TBA), can be characterized by a simple coupling impedance. A two dimensional computer program for studying relativistic klystrons has been developed by Robert Ryne and Simon Yu.² We have modified his code so that we are able to use it to conveniently study Two-Beam Accelerators of both the RK/TBA and the SWFEL/TBA variety. Results for a variety of configurations, and a range of parameters, will be presented.

* Supported by the US Department of Energy, Division of Nuclear and High Energy Physics, under contract No. DE-AC03-SF-00098.

1. J.S. Wurtele, D. Whittum, and A.M. Sessler, "Impedance-Based Analysis of the Relativistic Klystron and the Standing-Wave Free-Electron Laser Two-Beam Accelerator", submitted for publication in the Proceedings of the XVth International Conference on High Energy Accelerators, Hamburg, July, 1992.
2. R. D. Ryne and S.S. Yu, "Relativistic Klystron Simulations Using RKTW2D", Proceedings of the 1990 Linac Conference, Los Alamos National Laboratory LA-12004-C (1991).