Abstracts

Mode computation in long tapered multi-cell linear accelerator structures using the GSM method

M. Dohlus, A. Jostingmeier, A.S. Omar and C. Rieckmann. "Mode computation in long tapered multi-cell linear accelerator structures using the GSM method." 1997 MTT-S International Microwave Symposium Digest 3. (1997 Vol. III [MWSYM]): 1523-1526.

For a proper design of linear colliders it is important to know the resonant modes corresponding to higher order dipole passbands of long tapered multi-cell structures. Grid-oriented codes, as, for example, the MAFIA program package, cannot be used for the analysis of such structures. In this contribution, the accurate and numerical efficient generalized scattering matrix method is applied to the computation of these modes. The sixth dipole passband of the 180-cell accelerating structure used for the S-band linear collider at DESY is extensively being investigated with the proposed method. The calculations predict that this passband is especially dangerous for a stable operation of the collider which will lead to a change of the current structure design. The validity of the developed code is confirmed by comparing the results which have been obtained from the MAFIA program package for a 36-cell structure with those of our method. Furthermore a special numerical technique is suggested allowing a reliable computation of the so-called trapped modes which often occur in tapered multi-cell structures.

❑ Return to main document.