

Comments to TAC-1104/85, by P.S. Pissanetzky

K. Halbach - 7/15/85

Although I hate to waste time on an essentially trivial issue, I have been urged to respond to S. Pissanetzky's (S.P.'s) TAC-1104/85. I consider the raised issue a trivial one because, while I am the first to admit, enumerate, and describe deficiencies in POISSON, the "deficiency" raised by S.P. is not one of them. The problem is essentially improper use of the code.

Every computer code that deals with non-linear iron has, in some way or another, to interpolate in order to describe the nonlinearity of the medium. To minimize computer time, POISSON uses during execution a B^2 vs. $\gamma (= 1/\mu)$ - table, and the code contains some default tables that the user can utilize if he judges them adequate for this purpose. If they are not adequate (and the default tables, having been incorporated at a time when the highest field of interest was of the order $2T$, are indeed not adequate for some very high field computations), the user is obviously free to provide another properly generated table. In this case, a table with smaller B^2 -increments is, as S.P. admits, adequate (without increasing computer time!). While I agree with S.P.'s hard factual statements, I disagree with his judgement that one should use one of his recommended interpolation schemes during the iterations since they all would significantly increase execution time without a compensating benefit.

The computation of the B^2 vs. γ - table from original data used to be done not in POISSON, but externally. To make life easier for the user, very simple and unsophisticated algorithms to produce the tables were later incorporated into POISSON. They are adequate for many purposes. If they are not adequate, the user is obviously free to produce the tables externally. If of sufficient importance, one can also incorporate a better algorithm into POISSON. I agree basically, though not in every detail, with S.P.'s recommendations here, since they have been on my own list of desirable improvements for a long time. This would represent the typical kind of improvement that has been made for many years to adapt the code to new demands and needs.

KH:gf
1467S