PROFICNV

(conversion of the unformated output data of PROFI V5.2 into a TBCISF-readable format)

J.Stroede

A. Introduction

The program PROFI itself (V5.2) creates as output only a sequential file. Some MAFIA-routines, adapted by W.Remmer, additionally create a direct access file which could be converted via the FORTRAN-program PROFICNV to a format readable for TBCI-SF. PROFICNV assumes that the symmetry choosen in the corresponding PROFI-run was cylindrical (NGEO=3).

B. The file PROFICNV.DATA

Originally the FORTRAN-program PROFICNV was an interactive program. The version running under CERNVM reads its control data from a sequential file named PROFICNV.DATA The format of this data file (9 up to 12 lines; PROFICNV in principal allows the conversion of two superimposed fields, the following explanations do not cover this case) follows :

```
N1                      ( this  is  first line )
N2

...
...
. . . .                 ( three lines  of comment
. . . .                   with max. 72 characters
. . . .                   each, indispensable )
X1A X1E X3A X3E
C1                      ( this is the last line )
```

where N1, N2 and X1A, X1E, X3A, X3E are integer numbers and C1 is a single character enclosed in colons. Their meaning is

N1 = **1**   starts conversion to TBCI-SF format
   = **2**   starts conversion to WAKTRAC format (don't use)
N2 = **1**   output table contains R- and Z-components of E-field
       (if C1=E) or B-field (if C1=B)
   = **2**   it contains R- and Z-components of D-field and the
       electrostatic potential (if C1=E) or H-field and
       vector potential (if C1=B)
   = **3**   it contains both sets

C1 = 'E' or 'B'; this character in principal has no meaning on
            the conversion, but all values not equal to
            'E' or 'B' lead to an abnormal program-halt;

PROFICNV converts a part or all of the field-values calculated by PROFI. A window over the 2-dimensional PROFI-mesh (always of cylindrical symmetry as assumed by PROFICNV) is defined by X1A, X1E, X3A and X3E. If one numbers the R-components of the

gridpoints by integers of the range 1 ... n, and the Z-
components of them by integers of the range 1 ... m, it must be

1 <= X1A < X1E <= n   and
1 <= X3A < X3E <= m
        (the coordinates of the left-lower point of the grid are
        (1,1) according to the definitions within PROFI).

For a satisfactory run of TBCI-SF one has to be careful when
choosing a window. For example, TBCI-SF does not accept grid-
points in the 2nd quadrant, as they are used in the PROFI-run
for the LASERTRON. In this special case X3A=2 leads to correct
results.

In the PROFI main-program a call to subroutine MAFIA, which
creates the file PROFI.ITABLE, increments a block-typ-counter
(here referred to by I) which equals to 9 at start of
execution. Each time MAFIA is called, the name of the field
component, which should be next included in the ITABLE-file must
be given as a parameter (names are defined in /1/; help see
/2/). Since the sequence and number of the calls to MAFIA is
arbitrary in principal, it is neccesary to tell PROFICNV, where
to find the corresponding values. This is done by including the
relevant values of I between N2 and the lines of comment. In
case of N2=1 (2,3) one gets 2 (3,5) integer numbers which have
to be included only one each line. If for example the PROFI
main-program contains the following lines

```
...    ...                  ; here is  I=9
CALL MAFIA(...,'PHIE')  ;            I=10
CALL MAFIA(...,'E1 ')  ;            I=11
CALL MAFIA(...,'D1 ')  ;            I=12
CALL MAFIA(...,'E3 ')  ;            I=13
CALL MAFIA(...,'D3 ')  ;            I=14
```

the PROFICNV.DATA file defines N2=1, and the electro-static field
sould be converted, then the second to fifth line of this file
must be

```
1                  ; N2 = 1
11                 ; ( 3rd line )
13                 ; ( 4th line )
hallo              ; first line of comment
```

Additionally these block-typ-numbers, together with the
corresponding field-names could be found in the sequencial
output-file of the PROFI-run.

C. Acknowledgement

I wish to thank W.Remmer for the helpful discussions.

D. Reference

/1/ Das Programmsystem PROFI; W.Mueller, (10/80);
/2/ Extensions to the PROFI-User-Guide; Note PS/LP 89-39,
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