The RHIC Data Base

S. Y. Lee

October 1985

Collider Accelerator Department

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U.S. Department of Energy

DISCLAIMER

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October 23, 1985

I. RHIC Data Base

H. Hahn, T. Ludlam and I have set up a data base for the Relativistic Heavy Ion Collider. The data base, set up in June 1985, is located at:

BNLDAG"RHIC RHIC":DUA1:[RHIC]

It will provide the following capabilities:

1. It will allow communication among RHIC project contributors.

2. Essential programs in the design and operation of the RHIC will be located inside the data base. Anyone interested in the RHIC can access these files and work.

3. Essential programs, such as SYNCH, MAD, HARMON, etc., can be grouped together. This would help increase the calculational power.

4. National access of the data base through VAXNET, BITNET, or ARPANET will be possible. This will promote cooperation among colleagues in other national laboratories.

At present, the data base is set up with several subdirectories:

AGS   AGS lattice and beam properties needed for RHIC operation

AP   Accelerator Physics programs open to all users in the laboratory through VAXNET

BOOST AGS Booster

CRYO   Cryogenic data needed for RHIC operation

MAG   Magnet specification and information needed for the operation

MAIN   RHIC Collider

PARA   Parameter list of the collider.

PHYS   Physics requirements for the collider

VACU   Vacuum specification and data around the collider

II. How to Use the RHICDB

Members of the RHIC Task Force who are interested in the RHICDB should be registered in the Data Base in order to log into the system. Once you log in to the system, consult the VAX operating system manuals[1-3].

To communicate with	Use
CDC7600	Consult with the CYBERVAX manual[4]
CDC6600	CYBERVAX or CDCLINK.

The CDCLINK resides in DAGVAX. If you type $CDC <CR>, you can find a list of commands for file transfer and job submission.

The organization of the data base will be as following:

1. A set of globally defined symbols [in login. com] such as root, AGS, AP, BOOST... etc., enable the user to move around the directories easily.

2. Each subdirectory should have a file called "subdirectory.INF", so that users can find the proper file to work.

3. The author should put his name inside the program so that other people can refer to it. The authors are encouraged to create a file, e.g., your program INF to inform other people about the result of your calculation.

4. When you have worked on the data base, you should leave a few sentences of message in the file ZRHIC.NEW.

III. Present Status

Since the data base was just set up recently, it remains incomplete. Many of the subdirectories are empty. Lattices for AGS, BOOSTER and RHIC are now is the DB. Some programs such as MAD version 4.03 and the stand alone HARMON are in the [RHIC.AP] (see Appendix). Programs used in the calculation of the crossing geometry of RHIC and in the study of microwave instability across the transition energy are also in the DB.

Everyone is welcome to contribute his work and results to the data base. Hopefully, the data base will be useful to everyone. Current listed users are:

J. Claus	(claus)
E. D. Courant	(edc)
F. G. Dell	(dell)
H. Hahn	(hahn)
R. Gupta	(gupta)
S. Y. Lee	(syl)
T. Ludlam	(ludlam)
S. Tepikian	(tepikian)
P. Thompson	(pat)

References

1. VAX/VMS Command Language User's Guide   AA-D023C-TE

2. EDT Editorial Manual   AA-J726A-TC

3. VAX-II FORTRAN User's Guide   AA-D035C-TE
   VAX-II FORTRAN Language Reference Manual   AA-D034C-TE

4. CYBERVAX User's Guide

APPENDIX

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: September 20, 1985

TO: Accelerator Physics Group, HEF, NSLS

FROM: S.Y. Lee and R. Gupta

SUBJECT: Programs for Accelerator Design Studies

Besides the well known SYNCH, programs commonly used in the accelerator design studies are:
   (a) MAD version 4.03 (which also contain HARMON) author C. Islin
   (b) HARMON stand alone version, author M. Donald

These programs were transferred to us on August 7, 1985 from M. Donald (SLAC). Executable files of two programs are put on DAGVAX. The executable files reside on
           DAGVAX::DUA1:[RHIC.AP]

Anyone who is interested in using these two programs is welcome to use them. Please do note the following minor modifications.

[1] MAD403 -> MAD403S.EXE

(A) REF: "MAD PROGRAM REF. MANUAL" F.C. Islin CERN-LEP-TH/85-15

(B) STATUS
     a. The arithmetic expression is expanded to include TAN ( ), ATAN ( ), ACOS ( ) in Section 3.3.
     b. The dimension has been increased to 1800 elements in MAD403L.EXE.
     c. Input data file must be written in capital letters.
     d. How to use it:
             $ ASSIGN   your input file   FOR005
             $ RUN   DUA1:[RHIC.AP]MAD403S.EXE.

(C) Future Improvements

     We intend to modify the program so that it can execute subroutines such as SYNCH. If you have any problems or suggestions, please contact S.Y. Lee at Extension 3702 or R. Gupta at Extension 4805. If you need the source code, contact us also.

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⌊2⌋ HARMON ⌊You can also execute HARMON in MAD⌋

(A) REF: A User's Guide to the HARMON Program,
          M. Donald and D. Schofield (LEP Note 420)
          Note: The input format of this REF is slightly out
                 of date. The Tape 5 input format ramains
                 correct. The output (TAPE9) remains the same.

(B) STATUS:

   (a) A small program has been written to translate the TAPE5 (output) of
        SYNCH CYC command into TAPE 3 of HARMON and CATALOG that TAPE 3 in
        CYBER 6600. CDCLINK should be used to transfer that file to DAGVAX
        in order to execute HARMON with SYNCH output.

   (b) How to use it -
        (i) If you have FOR003.DAT file from the MAD calculation
             you could simply do
             $ ASSIGN (your HARMON command file)   FOR005
             $ RUN   DUA1:⌊RHIC.AP⌋HARMON.EXE

        (ii) If you have TAPE5 file from your SYNCH calculation in CDC7600
              then
              (a) Submit a job to CDC7600 with

                   ATTACH,MN,SYNHAR,ID=ADSGN
                   ATTACH,TAPE5,your Synch output file,ID = Your id.
                   REQUEST,TAPE3,*PF
                   FILE,TAPE3,RT=Z,BT=C,FL=80.
                   MN.
                   CATALOG,TAPE3,(Your HARMON file),ID = Your id ,ST=MFA.

                   *EOR
        DATA: NSUP, MSYM (format (I8, L8))
               TITLE TO BE WRITTEN INTO TAPE3

        NOTE: NSUP = number of superperiod
               MSYM = logical information (T or F) on the
               symmetric (T) or non-symmetric (F) design.

              (b) Use CDCLINK to read (your HARMON input file) from MFA.
                   Then follow the instruction of (i).

[2] HARMON |You can also execute HARMON in MAD|

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                   REQUEST,TAPE3,*PF
                   FILE,TAPE3,RT=Z,BT=C,FL=80.
                   MN.
                   CATALOG,TAPE3,(Your HARMON file),ID = Your id ,ST=MFA.

                   *EOR
              DATA: NSUP, MSYM (format (I8, L8))
                     TITLE TO BE WRITTEN INTO TAPE3

              NOTE: NSUP = number of superperiod
                     MSYM = logical information (T or F) on the
                     symmetric (T) or non-symmetric (F) design.

              (b) Use CDCLINK to read (your HARMON input file) from MFA.
                   Then follow the instruction of (i).