Chapter 25.
Budget and Schedule

Revised March 1994

25.1. Funding Profile and Non-DOE Contributions

The past funding (FY88-FY94) for E821 is shown in the table below in $\$k$:

Year	FY88	FY89	FY90	FY91	FY92	FY93	FY94
Funding	56	926	1900	1750	2825	1600	1971

The funding we have been told to use for planning purposes for FY95-96 is given in the next table in $\$k$:

Year	FY95	FY96	Total
Funding	2500	2000	15528

In addition to the DOE support, there are major non-DOE contributions to E821 totalling about $\$2100k$.

KEK contributed the much of the superconducting coil conceptual design and the superconductor for the four 14 m diameter superconducting coils and the low carbon steel for the pole pieces of the storage ring. They also assumed full responsibility for the engineering-design and construction of the superconducting inflector, and they have assumed responsibility for the scintillating fiber beam monitors which will go inside of the storage ring, as well as just upstream of the inflector.

The University of Heidelberg is contributing the NMR system for field measurement and control. In addition to the NMR probes and electronics, they have constructed the NMR trolley to be used in the shimming of the field. Furthermore they have assumed full responsibility for the NMR trolley which travels inside of the vacuum chamber and maps the magnetic field.

The Budker Institute of Nuclear Physics at Novosibirsk is contributing the beamline trim magnets.

The National Science Foundation is supporting the participation of the Boston University Intermediate Energy Group (Miller and Roberts) and the University of Illinois group. The NSF is funding the calorimeter construction, a large portion of the front end electronics, and the muon decay electron traceback chamber system.

25.2. Schedule

The detailed integrated schedule was published in the Semester Report for April 93 - September 93. [1] Briefly, the major construction milestones are:

Milestone	Date	Status
Coils and Cryostats	Sept-93	Done
Yoke Iron	Jun-93	Done
Magnet Assembled	Nov-94	Started
Cryogenics Complete	Nov-94	Started
Storage Ring Commissioned	Jan-95	Future
Iron Shimming Complete	Aug-95	Future
Installation Complete	Jan-96	Future
Beamline	Jan-96	Started

The experiment will be carried out in phases. After the fast extraction line, the production target station and secondary beamlines are commissioned, there will be a period of time when the storage ring itself will be brought on line. After some weeks of beam-dynamics studies, during which the detectors, electronics and data acquisition system can be tested, the dedicated running can begin. It will take some time to bring the 24 detector stations on-line.

We expect to take one bunch from the AGS per AGS cycle, during all of this shakedown period. After the initial commissioning is finished, we can expect to receive 3 out of the 12 (or 2 out of 8 if the machine is running with 8) to take data. [2]

In the first year of running we expect to commission the experiment and to repeat and improve upon the CERN experiment, *viz.* we will use pion injection. If time permits, and we get a dedicated several week run, we could achieve around an order of magnitude improvement on the CERN result. We have been told to count on a dedicated month run each year, but it is unclear whether this is true for 1996. [2]

We would expect to bring on the muon kicker in 1997. Because we have been told to plan for \$2.5 M in FY95, rather than \$3.0, it is not certain that the kicker can be ready for the 1997 run. We will do everything in our power to keep it on schedule, but with this loss of funding this year, it will be a challenge.

After the kicker is brought on, we will have to understand the beam dynamics of the ring/kicker system. Once this is understood, we will collect data and improve on our previous result at least down to an error of ± 0.4 *ppm* if the systematic errors are as expected. In the dedicated run of 1998 we will spend substantial time understanding the systematic errors, as well as collecting statistics, and we will achieve, or surpass, the goal of ± 0.3 *ppm* in the statistical error.

25.3. References

1. W. Morse, *E821 Semester Report (April - September 1993)*, *Muon (g-2) Note # 181*, December 1993.

2. M. Schwartz, private communication to the *(g-2)* management when asked for guidance on beam and running time.