BRAHMS Software

Decisions and Activities since the last quarter

- Analysis
- Framework
- RCF
- Mock Data Challenge
- Time scales for Tasks
- Calender

Analysis

- Have selected ROOT as analysis framework
  - memo of 3/3/98 to Software reps
  - no response, so everyone happy??
- BRahms Analysis Toolkit (BRAT)
- Intense activity in since 11/97
  - demonstration of principle
  - development of specifications
  - reiteration to conform to specifications
  - develop examples
    - TOF, TPC, DC digitization + track

BRahms Analysis Toolkit (BRAT)

- Base Classes
  - Module Base class
  - I/O Base Class
  - Module Container
  - Event Node Class
  - Data Table Class
- GEANT Classes
  - Inherits from I/O Base class
  - GEANT specific routines

BRAT (continued)

- Tracking Classes
  - Methods common to all tracking
  - Tracking Base Module (Inherits from BrModule)
  - TPC and DC tracking modules inherit from BrLocalTrackModule
  - Combine track module (debugging in progress)
  - structures common to all tracking

BRAT (continued)

Detector Specific Classes (Examples)

- TOF classes
  - digitization
- TPC classes
  - digitization
  - local tracking
- DC classes
  - digitization
  - local tracking

RHic Computing Facility (RCF)

- Purchases
- Mock Data Challenge (MDC)

RCF Status

- Intel Machines
  - Currently 40 Intel processors online
  - By end of year, should have 10% of nominal RHIC year solution
- Currently running Intel Solaris on majority of machines
- Switch to Linuix in near future
  - Objectivity port to Linuix
  - Some machines running Linuix to acclimate users to new OS.

Mock Data Challenge RCF Goals

- Demonstrate ability to record more than one experiment at 10% of nominal rate
- Demonstrate ability to reconstruct data of more than one experiment at a time with efficient use of resources
- Meet above two goals at same time
- Simultaneously perform data mining on reconstructed data
- Develop time averaged performance measurements

MDC
Experimenter Goals

- Learn more about performance of Off-line software
- Obtain experience in bookkeeping and data management of significant data volumes
- Perhaps learn about less frequent failure modes of Off-line software.

BRAHMS MDC

- Test the Full chain of software in an environment of multiple (jobs) users, and different access to data.
- Implement analysis chain from generation of simulated events, digitization to track reconstruction, Particle Identification and simple physics analysis.

BRAHMS MDC (continued)

- Employ software that will (or very likely to) be used in the production analysis code for Brahms.

MDC Preparation

- Generate ~1000 events for each angle setting and field
  - 120000 events
  - 2.5 Gb (20 minutes of real data)
  - 5 min/event => 10000 hours!!!
- Complete software

Time Scale for Implementation

- Implement base classes -> done
- Prototype offline analysis
  - TOF, DC, TPC digitization ->done
  - H1,H2 into GBRAHMS **(started?)**
  - local tracking prototype ->done
  - combine track prototype ->in progress
  - TOF-track combination code **(to do!!!)**
  - PID code with TOF **(to do!!!)**
  - Definition of DST event objects **(to do)**
  - Cross section and Global by June98. **(to do!!!)**

Time Scale (continued)

- Checkout prototype system (BRAHMS Software workshop, BNL, June 98) **who will attend?**
- Incorporate cross secion analysis macros into data chain (7-98)
- Implement scripts, calibrations, benchmarks for MDC1 (7-98)

Time Scale (continued)

- Production Reconstruction code development (10/98 - 4/99)
  - Calibration and database code
  - Cherenkov detector code
  - Centrality detector code
  - Refined track and track matching and determination code
  - Incorporate field maps for magnets
  - Quality control code/modules for reconstruction tasks

Time Scale (continued)

- Physics Analysis code development
  - Selection modules for μDST generation
  - Semi-inclusive data
  - particle correlation code
- Checkout production code (5/99)
- On-line monitoring code
  - Detector specific
  - Event Displays

Calander of Things to Do

- April - May 1998
  - Generate Phase I simulated events for MDC-1
  - H1,H2 into GBRAHMS code
  - TOF-Track combination code
  - PID code with TOF
  - Beam Beam counter code (timing start, event selection)

Calander of Things to Do (continued)

- June 1998
  - Generate Phase II simulated events for MDC-1
  - Check out prototype system

Calander of Things to Do (continued)

- July - August 1998
  - Incorporate Cross section macros and code into data chain
  - Implement scripts, calibrations and benchmarks for MDC-1
  - Begin MDC-1

Calander of Things to Do (continued)

- October, 1998 - April, 1999
  - Calibration and database code
  - Cherenkov detector code
  - Centrality detector code
  - Refined track and track matching and determination code
  - Incorporate field maps for magnets
  - Quality control code/modules for reconstruction tasks
  - Selection modules for μDST generation
  - Semi-inclusive data
  - particle correlation code

Times for Status and Functionality to be checked

- June 20-25, 1998
  - Software Workshop at BNL
- August, 1998
  - MDC-1
- May, 1999
  - Software workshop (hopefully things are very close by this time)

ESNet

- Network connection between National Laboratories and selected Universities for DoE Energy Research Program
- Wide Area Network of DOE for Energy Science Research Program
- Need list of institutions (national labs, domestic and/or foreign universities) that are critical for the success of BRAHMS in terms of network connectivity to and from Brookhaven