



## The PHENIX Ancillary Control System



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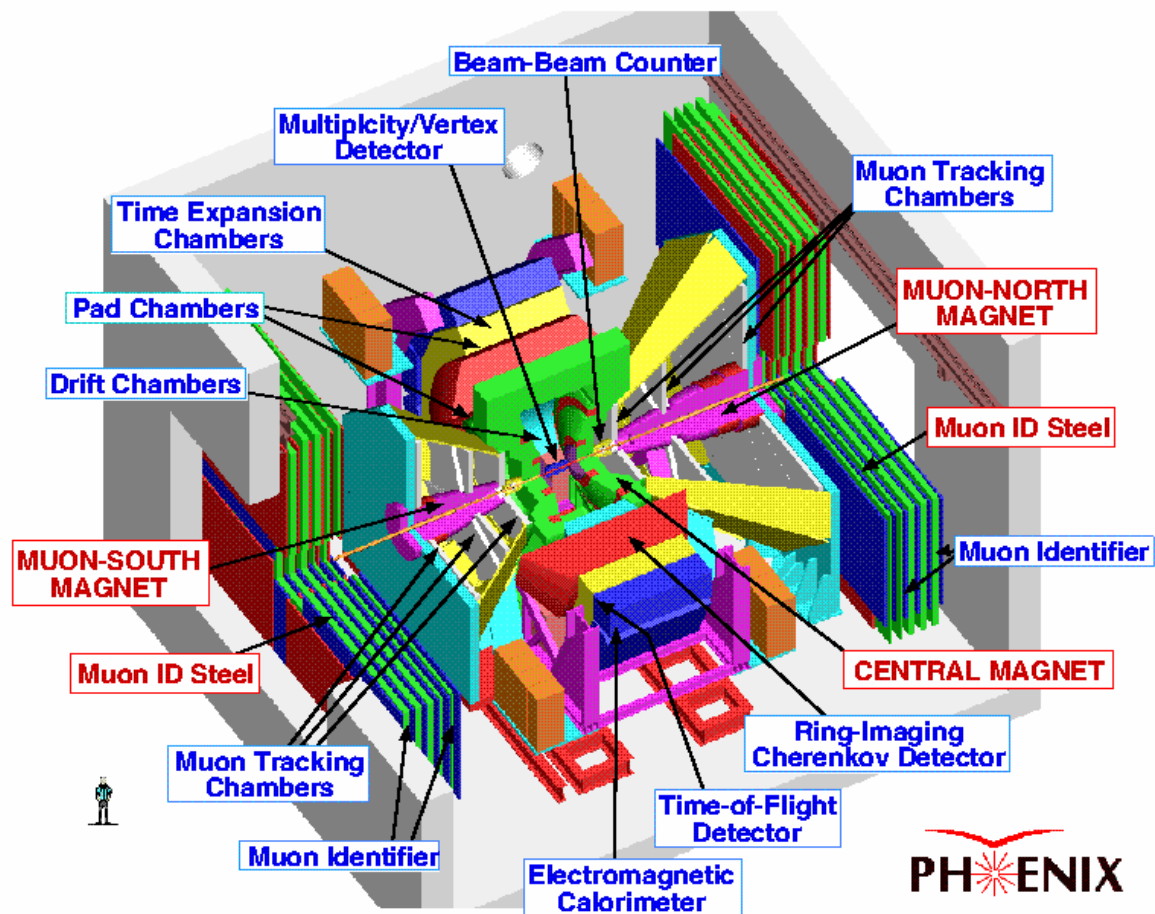
## The PHENIX Ancillary Control System

- I) Introduction
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- III) Objectivity/C++
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# The PHENIX Ancillary Control System

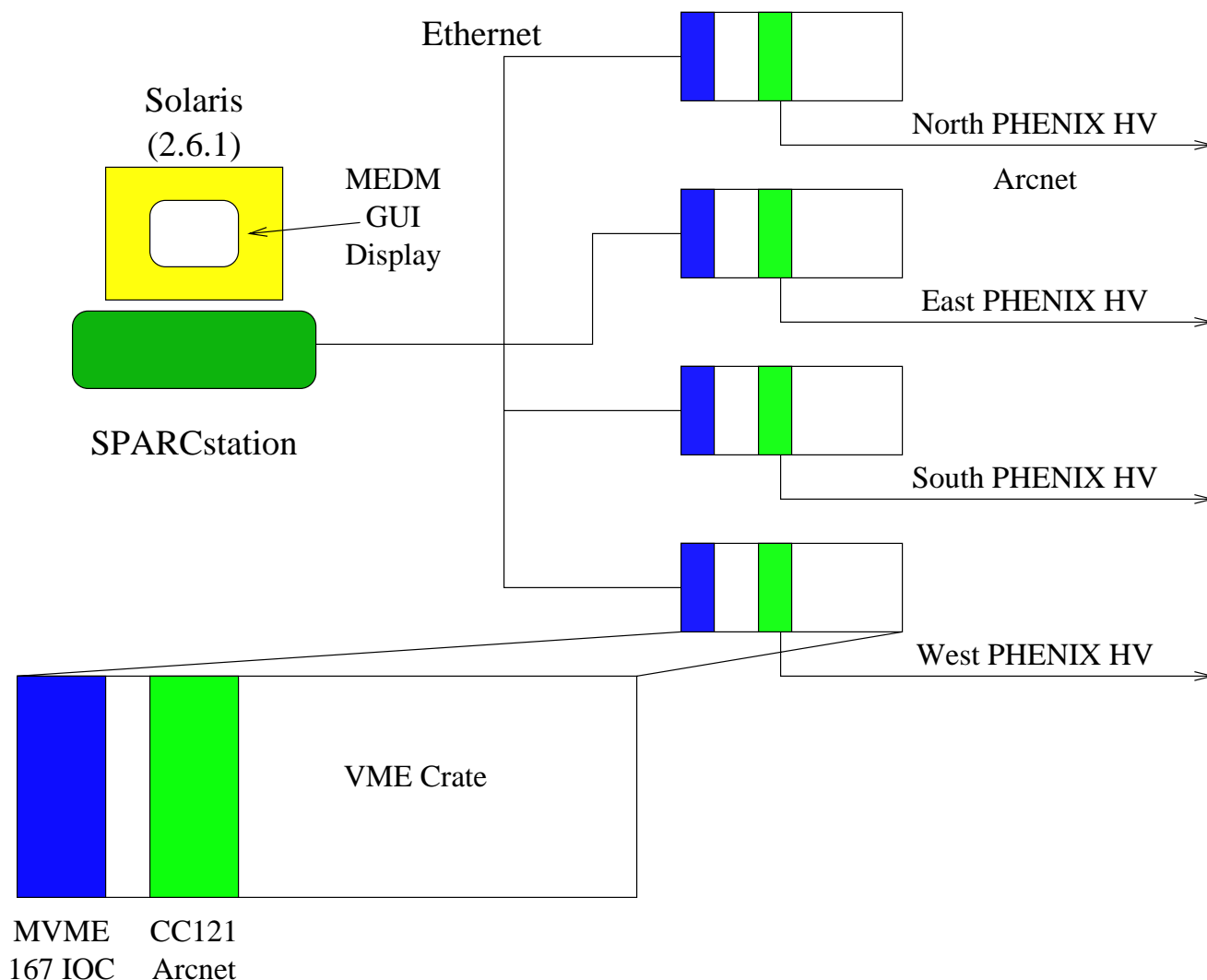
## Introduction



- The Primary function is to *remotely*, control, monitor and record the relevant PHENIX parameters.

# PHENIX Ancillary Control

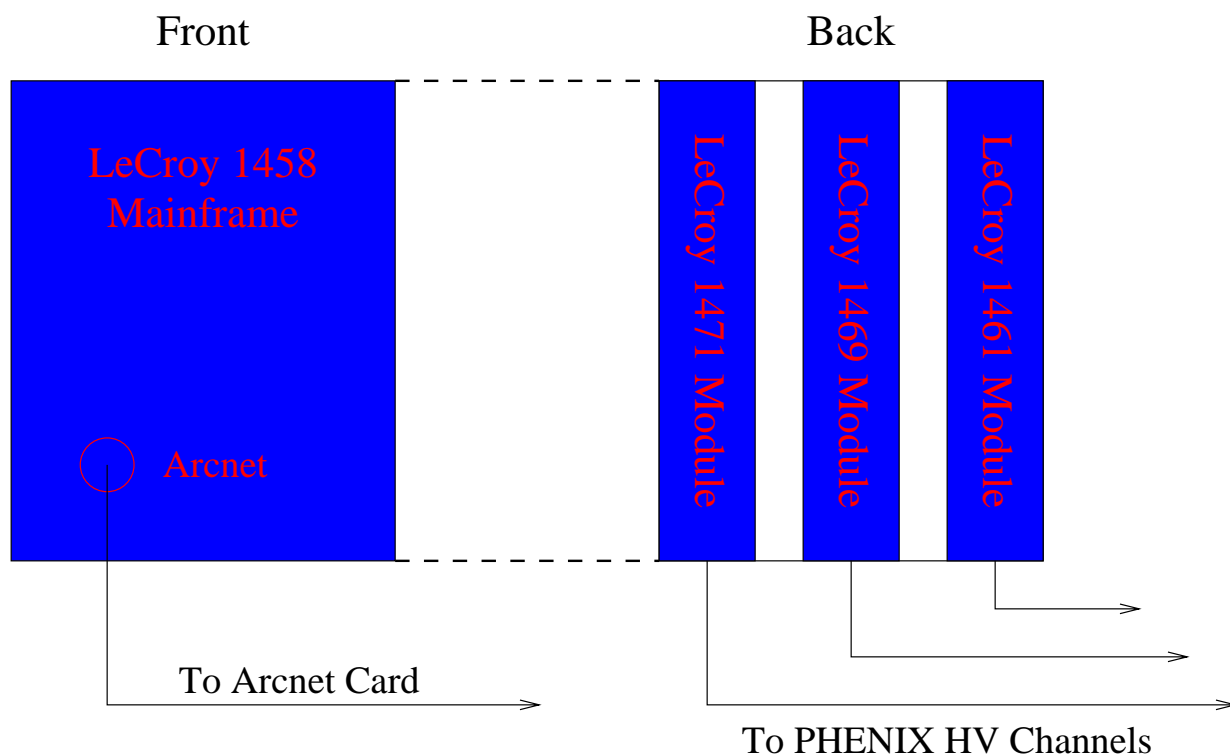
## High Voltage Computers



- Four Input Output Controllers (IOCs) that serve as Channel Access servers.
- Solaris SPARCstation running MEDM client for control.

# PHENIX Ancillary Control

## High Voltage Power

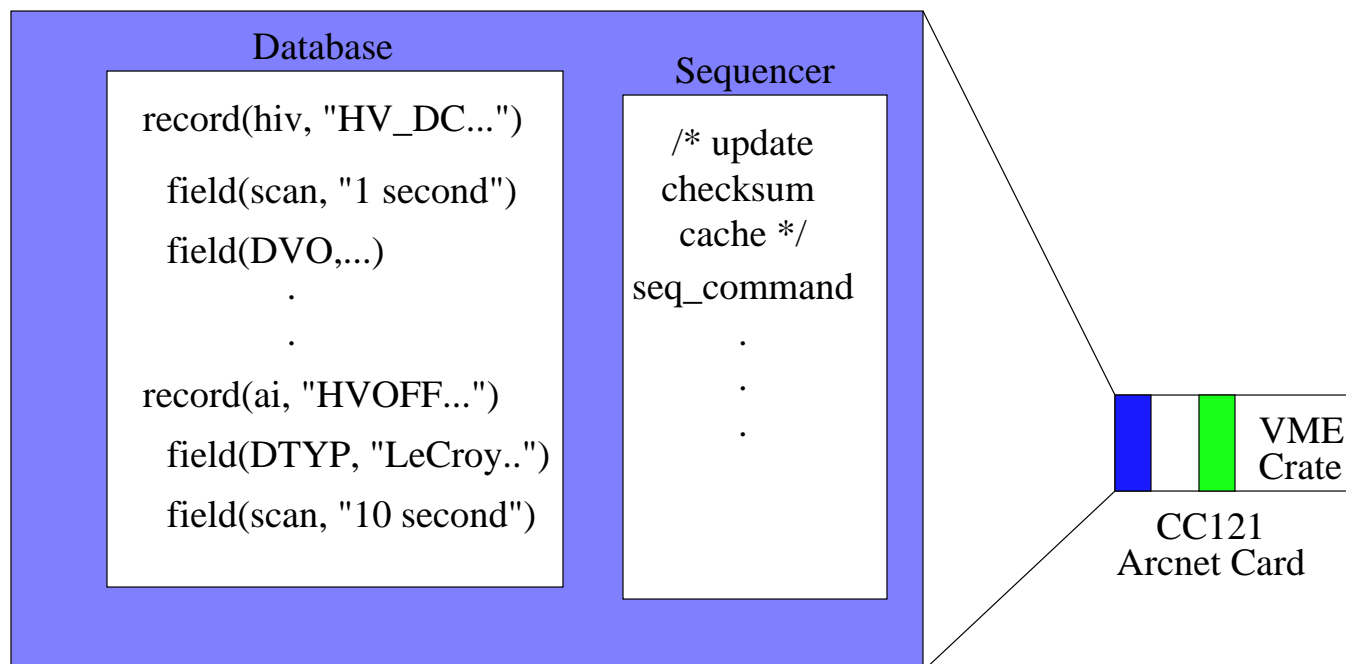


- Mainframe has processor on board that communicates *changes* in HV channels.
- Approximately 20 Mainframes for PHENIX.
- Approximately 3,500 HV channels multiplexed to give total of approximately 300,000 readout channels.

# PHENIX Ancillary Control

## EPICS Software

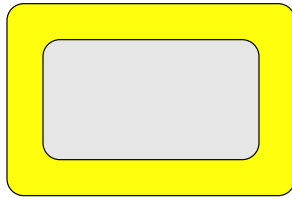
### MVME 167 IOC



- Motorola MVME 167 IOC running VxWorks 5.3.1 is the Channel Access server.
- The 167 uses the Motorola 680xx CPU and has memory extension from 4M to 16M.
- One to one correspondence between *HiV* records and HV channels.
- The use of the custom *HiV EPICSB* record reduces by approximately a factor of 10 the number of records.

# PHENIX Ancillary Control

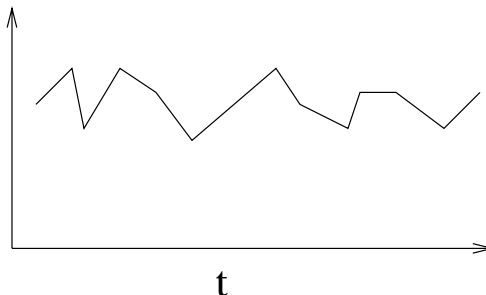
## EPICS Extensions



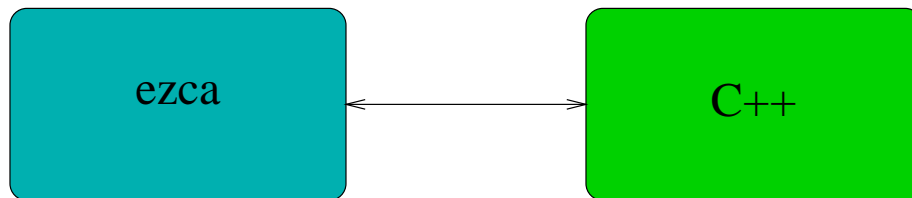
- Motif Editor and Display Manager (MEDM) is the GUI.



- The Alarm Handler will monitor the HV channels.



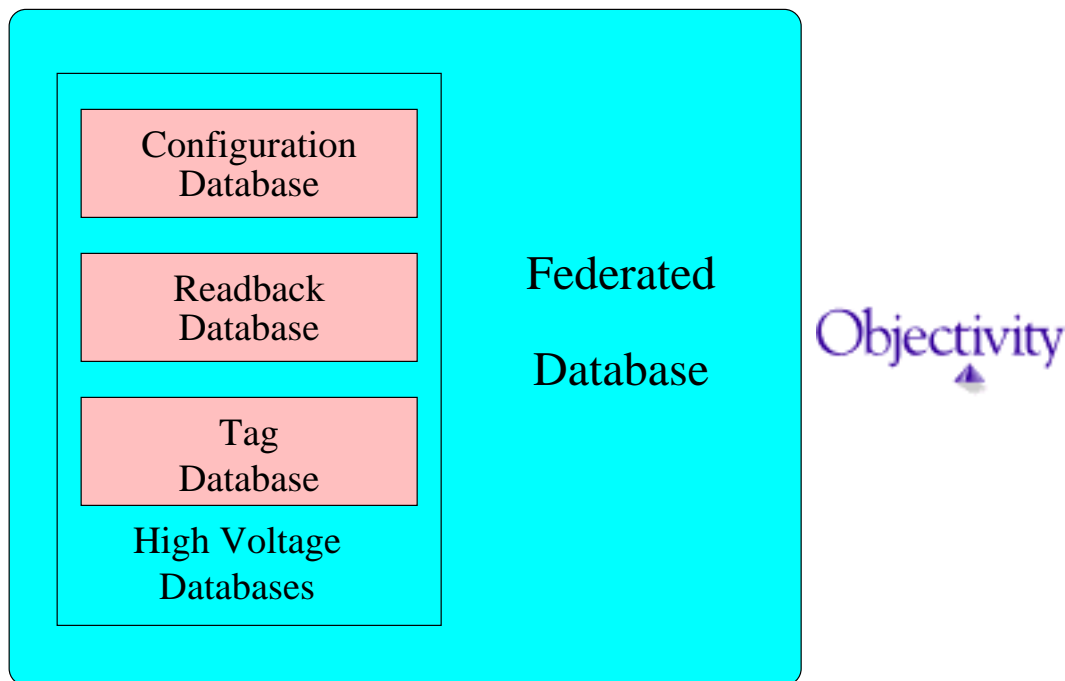
- The Stripchart will monitor relevant parameters.



- Easy Channel Access (ezca) allows for communication with other software.

# PHENIX Ancillary Control

## Objectivity Database



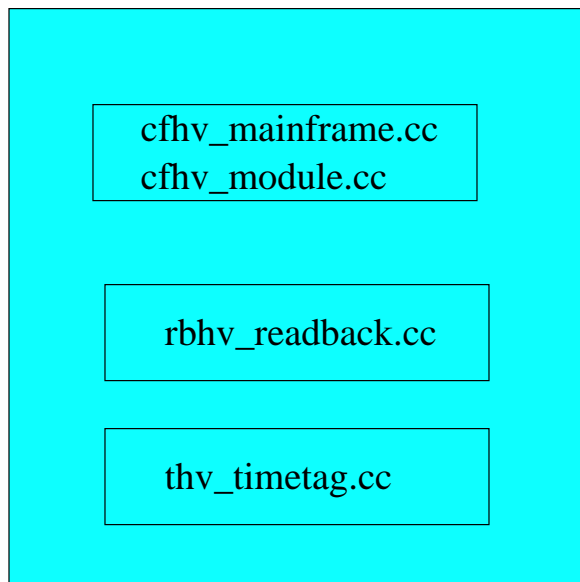
- The three HV databases within the PHENIXwide Federated Database are the Configuration, Readback and Tag and Tag databases.
- The EPICS database is created from the Configuration Database.
- The Readback Database has all of the desired readback information.
- The Tag Database contains the Configuration and Readback container names for easy and fast access.



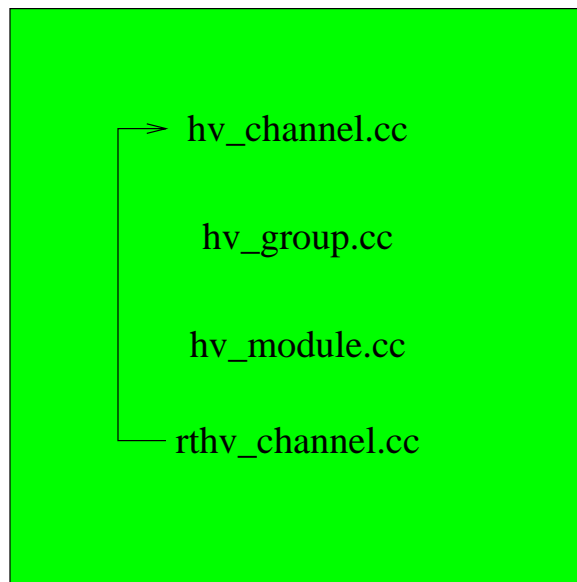
# PHENIX Ancillary Control

## Objectivity/C++ Classes

### Objectivity Classes



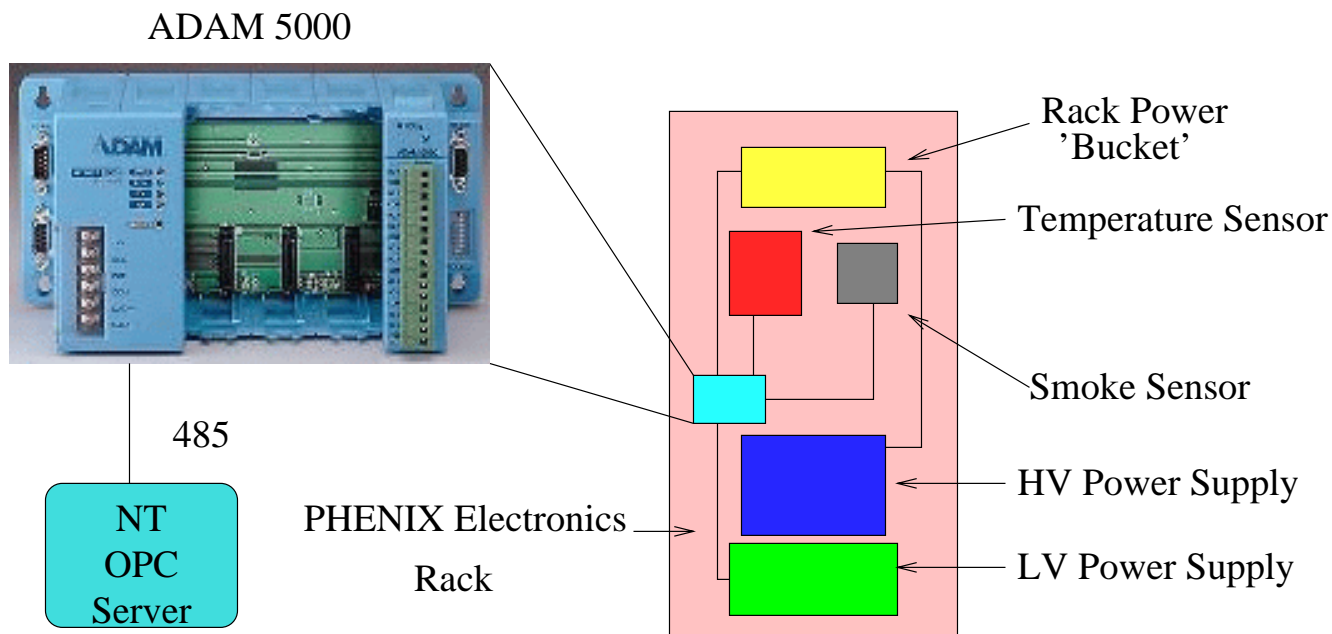
### Classes



- Separate classes for Configuration, Readback and Tag Databases.
- Objectivity classes have corresponding *DataDefinition Language(ddl)* files to support *persistant* objects.
- Real Time HV class uses EPICS *ezca* extension to communicate with EPICS database.
- HV channel class inherits member functions from Real Time class.

# PHENIX Ancillary Control

## Low Voltage



- At least one ADAM 5000 located in each of 36 electronics racks.
- ADAM 5000 configurable with different modules for different functions.
- Object Linking and Embedding (OLE) for Process Control (OPC) server running on Microsoft Windows NT platform allows for monitor and control of ADAM 5000 parameters.

# The PHENIX Ancillary Control Summary



- The individual components of the PHENIX Ancillary Control System have been extensively tested.
- While confident of success, the functionality of the entire system remains to be demonstrated.
- We look forward to interesting and challenging problems!

