Friday
1st session - Physics group

Topic: Cyberinfrastructure and Tools
Considerations of Cyberinfrastructure needs:
- What kind of preservation tools do we need?
  - ideas:
    - workflow capture/preservation
    - data provenance capture
    - computation capture/preservation
    - …?
- What kind of repositories do we need?
  - Who should host them?
  - What kind of data/software standards should we have?
  - Computing back-ends
- Do we need new software or data structures for preservation/open access?
- are existing access standards sufficient for data and publication control?

**Mike's question: What would you need if someone asked you to preserve your data (and methods?) and publish it in a repository?**

Particle and Nuclear physics

Tools that can interpret the data, formats are odd, each of them will have their own format (particle physics), same in nuclear

You have to archive both data and tools
You also have to archive demos
Finally, large amounts of data - we do it in a distributed fashion, VM, containers, etc.
Software - how would the VM look like in 50 years from now…. it will change significantly.
This is a framework for our discussions
PHysics is generating petabytes of data
Nuclear is smaller and data sets are GB or so… Need to archive calibrated data
Along with the raw data we would archive montecarlo simulated data. You need to simulate millions of events… regenerating the data is expensive
You want to be able to ask new questions to the data - new tool chain - the process of generators
PPhysics will generate millions lines of code, so you also need the infra to build that code, binaries, libraries, etc.
We need also workflow tools, data driven analysis, plus metadata to run the workflow
We need also a robust provenance infrastructure, where data comes from, what are the datasets, and these prov tools will also generate metadata

Finally you need the analysis codes, some sample analysis codes would be nice to have (demos)

Documentation - wow, this is big… magic

Lots of wepages that need to be also archived…

Very few particle physics experiments, but in nuclear physics there are many more experiments, but smallers.