

Topics Available from HEP

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Astrophysics research at TTU

Careful on multiplex

- random sample of a space
- random section
- pre-bias to specified parameters
 - phase base space
 - develop means of running MC
 - Particle physics \rightarrow applied math
 - 100s examples of improvement on accuracy and speed
 - Tools to note: BT, rootd

Astrophysics: SDSS

- Detailed Numerical Analysis
- Common Astro Physics Tools and expansion
 - IRAF Image Reduction and Analysis Facility
 - DS9
- Standard for image representation, FITS
 - File Format
 - Includes multiple methods of encoding
 - Analog to event container
- Tools tend to be observatory specific and Linux oriented

- SDSS needs a duplication of DR1
- What are the opportunities with SDSS
 - Solve preview problem
 - Emphasis features in the picture
 - Pull down menu options for analysis
 - Image Survey

Long-term: Super-Nova Accelerator Probe

- Large CCD
- Hardware problems
- Examples
 - calibration
 - imaging

We come starting with SDSS leading up to SNAP with an interest in physics. They have both hardware and software problems to deal with. We can help by showing algorithmic, software, and development strength. LBL, University of Michigan are our current compitiion. We can offer software for calibration.

Joint Astronomy and Computer Science problem to produce the mathematical section of the problem. A demonstration would be nice. Definately work out the problem thoroughly.

Keep up reading in Beylkin, Sweldon, Yellow Book. Also build tools with Pantheon. The key is tools for research and tools for contributions. On the fly tools would be really nice.

Common mathematical tools: Matrix multiply, matrix inverse, and matrix PDE Coefficient tree and matrices of energy distribution.

Watch out for paperwork, committees, and the proposal.