IVOA: Theory-IG Update and Status

Summary

- Theory IG Activities
  - IG startup
  - Projects
  - AstroGrid related

Theory: VO Project Status

- Gerard Lemson: all VO projects polled for Theory-IG rep
  - Contacts for most Vos: ref twiki
  - Updates for a number of projects received
- Theory input to simulations / UCD work
  - See submission by laurie shaw

UCDs/ DM in Theory

- Proposals from Shaw
  - Data structure (Data model)
  - UCDs
- Top level UCD 'sim' field
  - sim.obj.particle
  - sim.alg.hydro
- Application to n-body data sets
  - Number of subhalos: meta.number; sim.obj.halo.subhalo

Project Status:

- GAVO
  - Service accessing the Planck pipeline simulator
    - Generates simulated CMB maps from assumed multiple foregrounds
  - Service to allow queries of halo merger trees
    - Currently specific to MPA 'Gadget' datasets
    - Building to the 'Millenium' data sets
    - Basis of specific funding bid to the German D-Grid programme
  - Links to these services to be made available 'soon'

Project Status:

- Aus-VO theory wiki:
  - http://www.aus-vo.org/twiki/bin/view/Theory/WebHome
  - Theory portal under construction
- DRACO: Italian theory activities
  - Adaptation of AstroMD s/w for VO integration
    - Demonstration planned at the Oct ADASS (Pasedena)
    - http://cosmolab.cineca.it/
  - Construction of a national archive of theory outputs
    - Incorporating CINECA data
    - Assessment of system design now taking place – stds implications

UK Escience Programme: Studentships

- PhD studentships
  - Science through the application of escience
- Laurie Shaw:
  - N-body simulations
    - Bode + Ostriker
  - VO standards in 'theory' use
  - Focus: simulation workflows
    - n-body – halos – subhalos – science

UK Escience Programme: Virtu

- VirtU: The Virtual Universe
  - Large collaborative eScience proposal
    - Durham, Cambridge, UCL, Leicester, Oxford, Edinburgh, et al
  - Many codes, e.g.:
    - VIRGO – Gadget+
    - COSMOS
    - UKAFF
  - Aims:
    - access/manipulation of large simulations
    - Intercomparison of simulations
    - Theory/ observations interface
    - Vizualisation techniques
  - 'small' VirtU funded – postdoc in place Oct 2004
    - Focus: Virgo Millennium simulation VO accessible

AstroGrid Theory

- Limited focus to date, but:
  - Effort in AstroGrid2 related to model inclusion
    - Stellar synthesis models
    - Cloudy, starburst99
  - Archives
    - Archive of simulation catalogues, particle data
    - Inclusion of some theory models (via data centres)
  - Theory representation on Science Advisory Group
    - Itn6 movie maker of relevance to theory community
    - Use case driven

Theory-IG: Action Plan

- Recap: aim of IG is look across WG's
  - Feed specific demands to WG's
  - Feedback use cases and example implementations to WG's
  - Suggest formation of specific WG's
- Action Plan
  - Breakdown theory to sub areas
    - Large simulations: e.g. N-body, hydrodynamic, semi-analytic
    - Small simulations (=applications): e.g. spectral sysnthesis, photoionisation
    - Fundamental data: e.g. Atomic & molecular data
  - Identify study Leads
  - Analysis for each area: key WG mapping
  - Timeline: May 2005 for sub group papers

Actions: 2

- Specific stds activities:
  - Simaulation data model
  - UCDs for simulation data
- Specific implementation activities
  - IVOA complaint services
    - Halo catalogue service
    - Halo finder service
- Joint activities with the Apps IG