Horizon GalMer Database

value-added services

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GalMer Database: Science Case

- Simulations of major mergers of galaxies
- Statistical studies of star formation rate and efficiency changes, metal enrichment, kinematics and dynamics of merger remnants, formation of tidal dwarfs etc.
- Simulations of observations of merging galaxies

GalMer Database: Simulations (1)

- Tree-SPH code
- 3 types of particles: Hybrid, Star, DM
- Simulations till 3-3.5 Gyr
- Snapshots every 50 Myr

GalMer Database: Simulations (2)

- 2 giant (yet) galaxies (E0, Sa, Sbc, Sd)
- 120000 particles in each galaxy
- 12 different types of orbits (pericentral distance, relative velocity, etc.) with 2 different orientations of orbital moment with respect to the spin of galaxies
- 4 different inclinations: 0, 45, 75, 90 degrees

GalMer Database: Data (1)

- We trace the following properties:
  - x, y, z, vx, vy, vz, mass (all types of particles)
  - average metallicity (hybrid and star particles)
  - metal enrichment history and star formation history (hybrid parcles)
- FITS binary tables to store the snapshot data (12Mb per snapshot) + FITS tables to store SFH and MEH for hybrid particles (200Mb)

GalMer Database: Data (2)

- 50 to 70 snapshots for ~1000 simulations
- Total volume ~1Tb
- PostgreSQL with native XML support is used to store the Characterisation DM metadata
- Retrieval of integrated SFH using “stored procedure” (pl/pgSQL)

GalMer Database: WEB Access

- Simple DB Query interface
- Direct download of snapshot data (FITS)
- Usage of the “service” Java applet to interact with TOPCAT/Aladin/VOSpec using PLASTIC (Aladin or TopCat is used as a hub)
- All the required software components are started automatically by JavaScript (WebStart)

GalMer Database: Services

SNAP level 1, 2, and 3

- Maps generation (mass-weighted)

DATA ANALYSIS (luminosity-weighted)

- Image Generation (using PEGASE.HR)
- Spectra (data cubes) generation (PEGASE.HR)
- Luminosity-weighted LOSVD computation

Demo...

- http://galmer.obspm.fr/