Hervé WOZNIAK
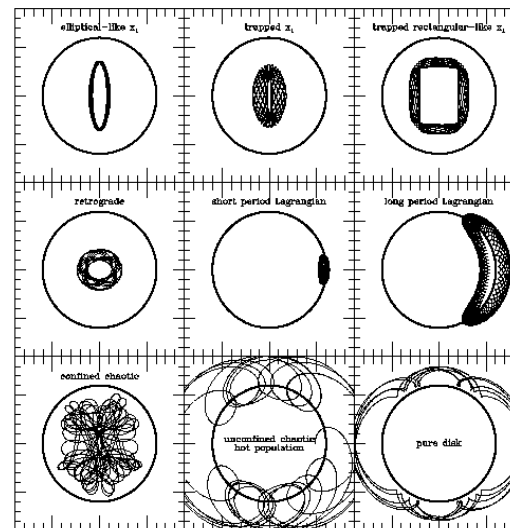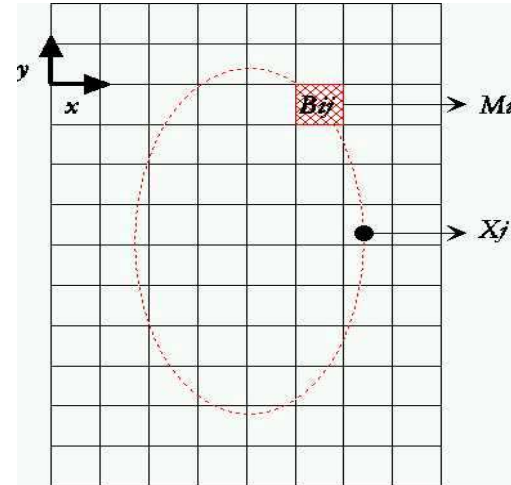
- 1987– ~2000 : multi-λ observations of barred galaxies / dynamical modeling
  - Parallel/vector computing (CM2, IBM3090, PVM on local network of workstations)
- 2000– : N-body, SPH, chemodynamical simulations, dynamical modeling
  - Parallel computing (IBM-SPx, MPI on PC clusters)

- 2002– : Virtual Observatory
  - Theory in the VO: access to huge amounts of data, use of GRIDs for webservices
  - SAC of VO-France
    - chair of OV-France Theory WG
  - Vice-chair IVOA 'Theory Interest Group'
  - EURO-VO DCA 'Theory Expert Group'

Use case: orbits computation on the GRID

- So-called 'Schwarzschild technique' to solve self-consistent problem of galactic dynamics

-
$$Min\left(\left\|M_i - \sum_{j=1}^{N_{orbites}} B_{ij} \times X_j\right\|\right) \approx 0$$

- → IBM3090 6 nodes (1987-1993)
  → PVM 50 local workstations (1993-1996)
  → MPI SP4 (cines) (2002-2006)

- Compute $10^5 - 10^6$ orbits on the GRID
- Inverse B_{ij} matrix on local computer (8 Gb RAM)
- 6 months x 12 nodes (2.2 GHz) full time

- Experiment on GRID ?

Utilisation de la GRILLE dans le contexte VO: projet HORIZON

Projet fédérant la communauté cosmologique française en simulation numérique haute-performance pour l'étude de la formation et l'évolution des galaxies dans les grandes structures de l'Univers.

Données brutes
64 x 9 10^6 part. (mésomachine HPC1)

Recherche structures (halos, galaxies, etc.)

CC IN2P3

Serveur d'application compatible standards OV

CRAL

Tomcat

MySQL

sql

http

IEx

Firefox

The database server located at Lyon in the IN2P3 computing center.

The web application server located at Lyon Observatory.
It takes http requests coming from the clients, processes them using the java servlet API, fetches the selected data from the database, generates responses using java server page templates.

Browser running on the client machines.

Utilisateur/client