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Astronomy and Astrophysics applications on EGEE from Paris, Grenoble, Lyon and Strasbourg Observatories

Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

We plan to post-process theoretical astronomical data contained in databases, in particular results of numerical simulations of the formation and evolution of galaxies in cosmological context (HORIZON project) and orbits computation in galactic potentials, as well as porting numerical simulations related to astronomy, astrophysics, cosmology, astrochemistry, molecular physics and dynamics of small bodies of planetary systems. We wish to test workflows for astronomical image processing.

Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

We are not experienced yet with EGEE, and will adapt our simulations and processing while learning. Nevertheless we have experience on two other systems: Grid'5000 (HORIZON collaboration) and CIMENT (Astrochemistry and Radiative transfer). Grid'5000 is a research effort developing a large scale nation wide infrastructure for Grid research. The main purpose of this platform is to serve as an experimental testbed for IT research in Grid Computing. Clusters in Grenoble are regrouped within the CIMENT initiative (https://ciment.ujf-grenoble.fr/) which is part of the regional grid CiGri (http://cigri.gforge.inria.fr/). CNRS researchers in Grenoble have been involved in the specifications and testing of CIGRI, and have demonstrated its ability to tackle large campaigns of millions of jobs.

Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

A&A applications require the deployment of codes on the Grid on the fly and in a transparent way. The use of a common infrastructure will foster a set of good practices and encourage evaluation, development and distribution of tools and services able to guarantee such a transparent code deployment. It will encourage development and deployment of standardized codes useful for each given A&A community. Lastly it will favor the fast return of scientific results needing millions of runs. As examples this concerns the exploitation of the theory in the virtual observatory, collaborative projects such as HORIZON, scientific preparation and exploitation of observational space and ground missions such as HERSCHEL/ALMA.

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