



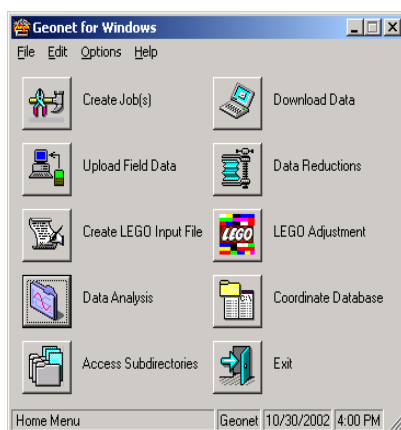
WinGEONET: What's New?

M. Gaydosh, L. Langer, C. LeCocq

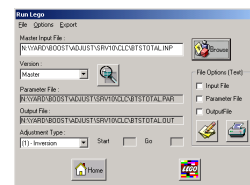
Stanford Linear Accelerator Center, Stanford, CA 94309, USA.

The name GEONET means data reduction software for the accelerator alignment community. It was developed in the early 1980's but the only thing left from the original version is the hierarchical directory structure to hold the observations and results. This poster presents the three components of WinGEONET: the Windows interface, the computational engine and the visualization tool. It also presents further developments towards a more versatile toolbox architecture.

Familiar but more concise opening Home Menu. Supporting programs are regrouped under the Data Analysis button and can be customized for particular users.



The Adjustment package LEGO is selected the same way. New Features are transparent to the user and are almost exclusively accessible through the Parameter File Editor.



New SIMS Features:

- Management of SIMS objects through tree and list views.
- Data import from DXF files in order to create a background drawing.
- Line objects can be interactively created as part of the background drawing.
- Zoom functions.
- Undo feature.
- Component design – LEGO runs as a server object, called LEGOServer.

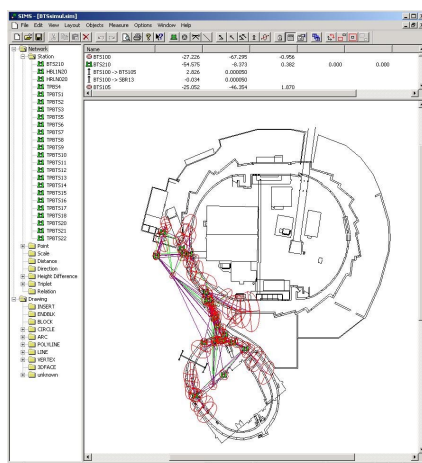
New LEGO Features:

- Special approximation routine aimed at tracker-level network. It is built on a new C++ class for station resection based on quaternion formalism. In the case of no a priori available coordinates, it also orients the datum using gravity-based observations reducing the number of necessary iterations.
- Azimuth observation.
- Rivet, allowing no knowledge of plane coordinates when only height observations made.
- Extended input validation checks.
- Consolidated structure for 3 potential station parameters: distance offset, scale factor, axis non-squaredness.

WinGEONET's Present:

The SPEAR 3 project provides a good opportunity to take advantage of the new features of both LEGO and SIMS. In preparation for the construction of the new ring which will start next spring, a special mapping effort of the existing facility has been undertaken this summer. Two issues were addressed:

- the connection of the ring with the booster,
 - the relation of all the beamlines with the ring.
- Both cases present challenging geometry as the tunnel openings are sparse and narrow. The ability to prepare and review a survey with an overlay of a CAD drawing was a definite plus for communicating with engineers and physicists.



WinGEONET's Future:

The next phase of software enhancement will be a closer integration of the data acquisition modules with the existing computational and visualization modules (LEGO and SIMS).

Component design promises numerous benefits concerning practicability and performance for a toolbox like WinGEONET.

New tools will emerge out of the process of development and provide:

- more flexibility in handling raw data.
- application of proven mathematical methods.
- fast visualization using graphical interfaces.