AccelOrator

AccelSoft

Volume 12, No. 1 **The Newsletter for Particle Beam Optics Software** *July 2008*

Announcing PBO Lab™ 3.0 Beta

The Next Generation in Particle Beam Optics Software

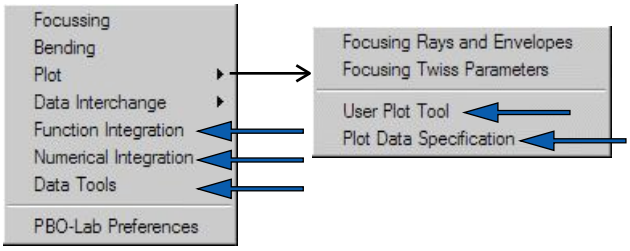
The Particle Beam Optics Laboratory (PBO Lab) has successfully served users throughout the accelerator community for more than a decade, providing a reliable modular software package that supports beamline design, accelerator operations, and personnel training. PBO Lab couples an innovative and intuitive graphic user interface with a spectrum of standard beam optics programs and adds a suite of additional tools to produce the most versatile dedicated beam optics modeling environment available. Utilized at more than 100 institutions in over twenty countries, PBO Lab has become a standard application for accelerator researchers. Our new PBO Lab 3.0 (beta release available) represents a major upgrade to AccelSoft's most popular software package. Notable new features include:

- New tools for data analysis and visualization
- Open Architecture Software Integration System
- New beam optics Modules

In addition, enhancements have been added to the long-standing suite of PBO Lab optics code Modules that includes the TRANSPORT, TURTLE, DECAY-TURTLE, MARYLIE and TRACE 3-D Modules.

• New PBO Lab Basic Package Tools

Included among the new tools for data analysis and visualization are specialized integration and plot tools, which are accessed from the PBO Lab Tools menu. The new Tools menu is illustrated in the Figure below with **blue arrows** indicating the new entries. These new tools are incorporated into the PBO Lab 3.0 Basic Package.



The PBO Lab 3.0 Tools menu contains two Integration items and a new Data Tools entry. The Data Tools encapsulate custom tools created with the User Plot Tool and Plot Data Specification items of the Plot submenu. Each of the entries opens intuitive setup or tool selection windows for defining custom PBO Lab features.

The new Tools menu entries provide users with the ability to define and add custom plotting and integration features to their PBO Lab 3.0 Basic Package, all using the intuitive graphic interface that is a hallmark of the PBO Lab software.

• OASIS Supports Custom PBO Lab Modules

The Open Architecture Software Integration System (OASIS) offers users the ability to integrate their own beam optics programs into PBO Lab. The OASIS Module Builder is used to create custom PBO Lab Modules without the need to write any new source code. The new PARMILA-2 Module and DIMAD Module (described on Page 2) were created with the OASIS Module Builder.

Upcoming Conferences

AccelSoft plans to attend the following conferences as an industrial exhibitor. We invite our readers to meet members of the AccelSoft staff and to take advantage of the opportunity to ask questions, offer suggestions, and learn more about our software.

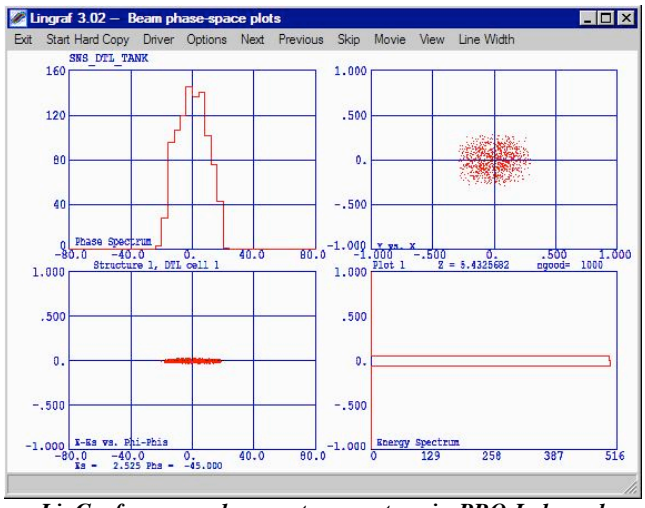
- **20th International CAARI Conference (CAARI 2008)**
  Fort Worth, Texas *10-15 August 2008*
- **XXIV Linear Accelerator Conference (LINAC 2008)**
  Victoria, British Columbia *29 Sep - 3 Oct 2008*

AccelSoft Inc. ▲ 10855 Sorrento Valley Road Suite 203 ▲ San Diego, California 92121
Phone: 858.677.0133 ▲ Fax: 858.784.3736 ▲ E-mail: accelsoft@ghga.com ▲ www.ghga.com/accelsoft
AccelSoft Inc. is a subsidiary of G.H. Gilllespie Associates, Inc.

PARMILA-2 & DIMAD
Two New Beam Optics Modules for PBO Lab Version 3.0

- **PARMILA-2 Module**

The PBO Lab PARMILA-2 Module was developed for the 2nd generation of the Phase And Radial Motion in Ion Linear Accelerators program developed at the Los Alamos National Laboratory. By far the most popular program for designing and simulating the performance of complex ion accelerator components such as drift tube linacs (DTLs), coupled cavity linacs (CCLs), and superconducting linacs, PARMILA 2 has been seamlessly integrated with PBO Lab 3.0 via the PARMILA-2 Module. PARMILA 2 is also useful for the simulation of intense beams in transport channels and for studying beam loss, misalignments, and similar off-nominal operation.

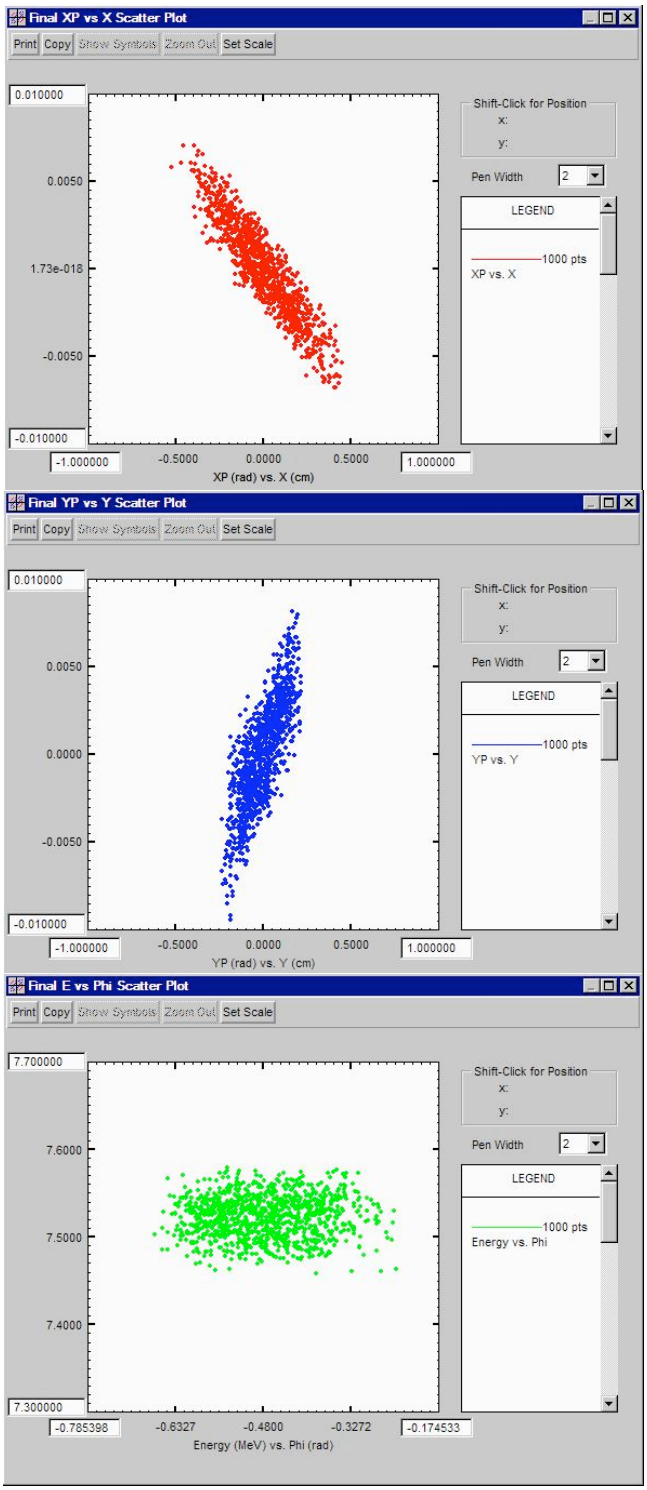


LinGraf command requests are set up in PBO Lab, and the LinGraf executable is run directly from a PBO Lab menu.

The PBO Lab PARMILA-2 Module supports all of the standard PARMILA plotting features, such as those provided by LinGraf. The above figure illustrates a LinGraf display defined and created in PBO Lab. Other unique PARMILA displays have also been created for the PBO Lab PARMILA-2 Module. Some examples of these displays are shown to the right. No modification or recompilations of any of the PARMILA 2 executables were required in order to create the PARMILA-2 Module.

- **DIMAD Module**

Another new Module is under development for the electron beam optics program DIMAD. DIMAD is useful for both the design and study of circular machines and transfer lines.



Custom PBO Lab displays have also been developed for PARMILA 2. The examples illustrated here show plots for the horizontal (red), vertical (blue) and longitudinal (green) phase spaces.