AccelOrator

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Special Edition Commemorating USPAS Collaboration!

AccelSoft Celebrates 20+ Years of Supporting USPAS Education

About AccelSoft Inc.

AccelSoft was formed in 1997 to publish, market and distribute scientific and educational software devoted to the field of particle accelerators. The company's software integrates state-of-the-art physics and engineering programs with modern user-friendly graphic interfaces. Our software is now used in more than 100 organizations in over 30 countries.

About AccelSoft's Software.

Our signature software, the Particle Beam Optics Laboratory, better known as simply PBO Lab, is based upon software technology developed with support from the U. S. Department of Energy (DOE) Small Business Innovative Research (SBIR) program. The first SBIR grant developing the initial concept for PBO Lab started in 1994, with an emphasis on educational applications. PBO Lab was further supported by several more DOE SBIR grants that focused on sophisticated applications for accelerator physicists and engineers. Today there are more than ten Modules that provide applications for a wide variety of accelerator systems. The most popular Modules are summarized on the next page. Accelerator related software developed by other organizations is also licensed and distributed by AccelSoft (see page bottom and page 2).

Supporting the USPAS.

AccelSoft Inc. together with its predecessor organization has been providing software to the U. S. Particle Accelerator School (USPAS) for more than two decades. PBO Lab has been used by a number of USPAS classes, several of which are listed in the right-hand column. The USPAS maintains an Instructor's License so lecturers may evaluate PBO Lab's suitability for their course and set up class and lab examples.

*** PBO Lab in USPAS Classes ***

The Particle Beam Optics Laboratory (PBO Lab™) is AccelSolf's most popular and versatile software. The U.S. Particle Accelerator School (USPAS) has utilized PBO Lab software for a number of classes, including the following:

Accelerator Physics, Instructor: Eric Prebys
University of Tennessee, Knoxville, Jan. 20-31, 2014

Accelerator Physics, Instructor: Eric Prebys
University of Texas, Austin, January 16-27, 2012

Fundamentals of Proton Linear Accelerators with Simulation Lab, Instructors: John Staples, George Gillespie, Sang-Ho Kim
Old Dominion University January 17-28, 2011

Fundamentals of Low-beta Linear Accelerators with Simulation Lab, Instructors: John Staples, George Gillespie
Michigan State University June 11-15, 2007

Fundamentals of Particle Acceleration, Instructors: Michael Syphers, Elvin Harms
UC Berkeley, San Francisco, January 10-21, 2005

Accelerator and Optics for Proton Therapy Applications, Instructors: George Coutrakon, George Gillespie
UCLA, Long Beach, January 21-25, 2002

Accelerator Fundamentals, Instructors: Michael Syphers, Elvin Harms, Dave Vander Meulen, Arden Warner
Rice University, Houston, January 15-26, 2001

Accelerator Fundamentals, Instructor: Michael Syphers
University of Tennessee, Nashville, January 18-29, 1999

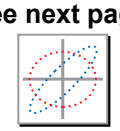
Introduction to Accelerator Optics, Instructors: Karl Brown, David Carey, George Gillespie
UCSD, San Diego, January 15-26, 1996

Not all classes utilizing PBO Lab are listed. Predecessor applications to PBO Lab were also used in earlier classes.

Software for Accelerator & Beamline Design and Simulation:

Beamline Simulator™

PBO Lab™ (see next page for Modules)



LIDOS RFQ Designer™

LIDOS

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Application Matrix for PBO Lab 3.0 Modules

This chart (reprinted from AccelOrator Vol. 13) provides selection guidance for PBO Lab Modules to meet particular requirements. The most commonly used PBO Lab Modules are listed as column headings, and some primary areas of application are given along the left side. Check marks indicate areas of frequent applications for each Module. Please contact AccelSoft for additional information.

PBO Lab™ Module Principal Applications:	Basic Package	TRANSPORT	TURTLE	DECAY-TURTLE	MARYLIE	TRACE 3-D	PARMILA-2	ElectroStatic (ES) Palette	TravelingWave (TW) Palette	Optimization Module	OASIS™ Module Builder	Custom Modules
Optics Tutorial	✓											
Transfer Lines	✓	✓	✓	✓	✓	✓	✓	✓		Same as TRANSPORT, TRACE 3-D, ES Palette &/or TW Palette	Add Optics Programs to Meet Your Requirements	Ask AccelSoft About Creating Specialized Modules
Linear Machines	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Circular Machines	✓	✓			✓							
Electrons	✓	✓	✓	✓	✓	✓		✓	✓			
Protons	✓	✓	✓	✓	✓	✓	✓	✓				
Heavy Ions	✓	✓	✓	✓	✓	✓	✓	✓				
Radioactive Ions				✓								
Beam Envelopes	✓	✓			✓	✓	✓	✓	✓			
Particle Simulation			✓	✓	✓		✓					
Magnetic Optics	✓	✓	✓	✓	✓	✓	✓					
Electrostatic Optics								✓				
RF Optics		✓	✓	✓		✓	✓		✓			
Space Charge*	2D					2D,3D	3D	2D,3D	3D			
Optics Order**	1	3	3	2+	3+	1+	2+	1+	1+			
Parameter Fitting		✓			✓	✓		✓	✓	✓		
Optimization										✓		
Nonlinear Constraints										✓		

*Space Charge 2D simulates continuous beams, 3D simulates bunched beams

**Optics Order 1 refers to linear optics, higher orders include nonlinear optics and aberrations