Welcome to the 2021 Bmad/Tao Internet School!

Coursework:

The goal of this school is to introduce you to Bmad and give you a hands-on experience using Tao which is program based upon the Bmad toolkit. The Bmad/Tao web site is at:
> www.classe.cornell.edu/bmad/

The school indico page is at:
> indico.classe.cornell.edu/event/2021/

The course materials are at:
> www.classe.cornell.edu/bmad/manual.html

Click on the "tutorial_bmad_tao.pdf" to get the course manual. Click on "Associated tutorial files" to get files you will need for running Tao.

The course format will be "reverse classroom" with students reading and doing exercises from the "Tutorial to Bmad and Tao" tutorial aided by the teachers with communication through Slack. There will also be optional Zoom sessions (see below).

If you have not already done so, please join the Bmad Slack workspace:
> join.slack.com/t/bmad-simulation/shared_invite/zt-flwsmsc3-lTpqJyhRKNwWkZSA6b4LUw

If you have any problems please contact dcs16@cornell.edu.

The course is self-paced. The following is a suggested schedule for the ten days (2 weeks x 5 days/week) of the course.

Day	Chapters	Topic
1.	1-5	Starting Tao
2.	6-8	Introduction to Tao
3.	9-11	Intro to Tao Continued & Control Elements
4.	12-13	Machine Coordinates & Phase Space
5.	14-16	Superposition and Multipass
6.	17-18	Forks, Branches and Tracking Methods
7.	19	Optimization with Tao
8.	20	Lattice Correction
9.	21	Beam tracking
10.		Student's choice

Student's choice can be **any** subject you want to explore! Something like chapters 22 or 23 in the tutorial, Bmad programming, X-ray tracking, etc. Please talk to an Instructor if guidance is needed.

Note: Since the course is self-paced you can spend as much time or as little time as you want each day. And even the two weeks advertised for the course is not a hard limit. You can take as many days as you want to finish since the Bmad Slack workspace is always available independent of the School.

Zoom Sessions:

The Zoom session schedule is at:
> indico.classe.cornell.edu/event/2021/timetable/

The schedule for Nov 1-3 is posted. Sessions for the rest of the school period will be posted later. Note: Scott Berg is the expert on Windows and Chris Mayes is the expert on installing Bmad/Tao with Python.

Zoom sessions are optional and are meant as an alternative way to communicate with the teachers. You may schedule a one-on-one zoom session by making a request on the 2021-bmad-tao-school channel of the Slack workspace.

The Zoom URL is:
> cornell.zoom.us/j/8939183501?pwd=MmRzL2gzdGFxNWpuQ1JaeE1tL0JnQT09

Email david.sagan@cornell.edu if there are any problems connecting.

Bmad/Tao Installation:

The first thing you will need to do for the class is to install Bmad and Tao on a computer of your choice. Installation instructions are at:
> wiki.classe.cornell.edu/ACC/ACL/OffsiteDoc

For any **BNL** users, you can use a Bmad installation available on the CAD Unix systems rather than installing Bmad on your own system. To do so:
> 1. Switch to a bash shell by executing "/bin/bash".
> 2. Type ". ~jsberg/Software/Bmad/bmad-setup.sh"

If you have any problems, contact Scott Berg (jsberg@bnl.gov or use Slack).

For any **SLAC** users, the following link has instructions on how to access a Bmad on SLAC computers:
> slaclab.github.io/lcls-live/environment/index.html

If you have any problems, contact Chris Mayes (cmayes@stanford.edu or use Slack).

Note: If you use **conda** (Python package manager) to download a Tao executable, you should also download (but you do not need to compile) a Bmad Distribution (see the installation instructions link above) since a Distribution contains many useful lattice examples. The tutorial assumes that the environment variable **ACC_ROOT_DIR** is set to point to your Distribution. If you compile a Distribution, this variable will be set by the Distribution compile scripts. If you use **conda**, will will want to set **ACC_ROOT_DIR** via:

> export ACC_ROOT_DIR=<path-to-your-Distribution>

where **<path-to-your-Distribution>** is the path to the root directory of your distribution (and make sure that there are no spaces around the equal sign).

It is highly recommended that you install Bmad/Tao sooner rather than later since if there are any hiccups, the process of sorting things out will be less rushed. That is, it is recommended for

you to try to install Bmad/Tao before Monday. **Please do not hesitate to communicate via Slack if you have any installation problems**....

Once you have Bmad/Tao installed, to test that you can run Tao with the command: tao -lat $ACC_ROOT_DIR/tao/examples/cesr/bmad_L9A18A000-_MOVEREC.lat This should give the plot window below.