

Minutes of the ABP Computing Working Group meeting

6th February 2020

Participants: I. Agapov, H. Bartosik, X. Buffat, T. Charles, L. Deniau, J. Dilly, R. De Maria, A. Huschauer, G. Iadarola, L. Malina, E. Métral, J. Moslon, N. Mounet, Y. Papaphilippou, K. Paraschou, A. Poyet, H. Rafique, G. Rumolo, L. Sabato, G. Sterbini

NXCALS

The conditions to phase out the CALS agreed upon at the Evian Workshop in 2019 are currently not met. A list of methods required in the backport API to keep pyTimber without major changes was discussed with CO and their implementation was expected by mid 2019. R. De Maria's experience with the methods available is that they are not compatible with pyTimber as the nature of the returned objects has changed. A significant fraction of the methods became available only this morning and have not yet been tested. The responsibility to carry out the necessary tests and to maintain pyTimber is currently undefined.

R. De Maria conducted a survey to determine the amount of users, their needs and desired timeline for a functional pyTimber. The large amount of users strongly supports dedicating the proper amount of resources for its maintenance. G. Iadarola added that, even if some users are willing to re-write their codes using pySpark directly, many simple tasks are common to several users and require several manipulations when using pySpark (e.g. retrieving a series of variable for a given time interval). Consequently the pyTimber layer makes also sense to avoid duplication of codes.

Currently the testing of the backport API in ABP is stalled given that the issues reported to CO at the ABP-CWG in Dec. 2018 were not yet addressed.

A. Huschauer mentioned that a functional logging is required for the LINAC4 startup and then for the other injector rings, therefore C. Roderick has been invited to the Injectors Performance Panel (IPP) on the 27th of February to discuss this issue. A. Huschauer will collect the main points from today's discussion and produce some charge questions for the CO presentation at the IPP. Representatives of the ABP-CWG experienced with the usage of NXCALS are also welcome to join that meeting.

L. Deniau asked how the conversion from NXCALS to CALS data structures is performed. R. De Maria answered that the absence of conversion is the main cause of incompatibility for the backport API.

cpymad

cpymad is a cython interface to MADX. It launches a separate process running a MAD-X instance that can be controlled in a 'pythonic' through a high level class. R. De Maria suggested to include cpymad in the testing suit of MAD-X. L. Deniau asked about the complexity and readability of the source code. R. De Maria answered that it is accessible. L. Deniau asked whether the data accessible in the python process is a copy of the one in the MAD-X running instance. R. De Maria answered that simplest data types are copied, while more complex ones such as tables are in fact python objects acting as a proxy sending requests for getting or setting data in the MAD-X process.

G. Iadarola asked whether ABP should take the responsibility to maintain this code. R. De Maria suggested that the ABP-CWG evaluates the needs and make a recommendation. R. De Maria, the OMC team, G. Sterbini, G. Iadarola, Y. Papaphilippou and X. Buffat expressed interest.

L. Deniau warned about the rather subtle side effects in MAD-X caused by the excessive usage of global variables which may result in severe bugs when interfacing to python.

In the frame of a CAS lecture, Guido made available on the web a series of examples using cpymad with the various CERN machines. They are accessible through the indico page of the meeting.

RadiaSoft's request

RadiaSoft asked whether the development and integration of a gridded symplectic solver in PyOrbit as well as the integration of pyOrbit in the SIREPO framework would be supported by CERN. Y. Papaphilippou reported that they have good contacts with RadiaSoft as they participated to useful developments in other aspects. Yet, since pyOrbit is not a CERN code, it is unclear whether CERN can support its integration in a commercial and open product. Y. Papaphilippou suggested to invite F. Schmidt to report on the current discussions with RadiaSoft. E. Métral will ask for the letter from RadiaSoft including the details of their request to be sent to the ABP-CWG.