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Talk of F. Schmidt

Comments from Frank: computation time 50 s /turn for 10M particles. The code has several solvers, ready for verification and tests.

Jeff Holmes: in code comparison of Frank, there is diffusion problem but not related to emittance blow up.

Question about the symplecticity from Steven? The symplecticity in the code is respected, normal behavior, according to Frank. It has been suggested to benchmark with KV distribution.

Steven asks if there is not a problem of windowing in his simulation. Frank answered no.

Talk B. Holzer

Question of Shinji (again, not sure)

Shinji said 20% accuracy on the Fast Wire Scanner (FWS) for emittance measurements is not too good. Because of the procedure? Or the measurements itself?

Answer of Barbara: from measurements. Vibration from the wire etc... the dynamics range is small. Error on fit due shower of particles... For LHC, it is the same problems, but Barbara pointed out that they hope to reach 10% instead of 20%.

Simone said that when there are comparisons PS/PSB with blow-up, it is less than 10%.

Elias: no plans for Halo measurements?

A: no way to do it. Need a light source. And one has to be careful to diffraction, should deal with this, but a light source is needed.

Talk of Jutta

It was asked if conflicts occur when the grid is updated. Jutta said that something does smoothly by the GPU. Leonid asked which precision is used in her GPU work. Jutta answered double.

Talk of Sabrina Appel

R. Williamson (not sure) said that the difference observed between PATRIC and PyOrbit can come from the Thick lens approximation.

Discussion

-codes:

Jeff Holmes insists on, for LHC and other machines, the codes should be used more to compare with measurement. Codes are going well, since more computing power is available.

Long discussions between Alexey, Jeff et al. about the breakdown of the model. When do we know we reach the breakdown of the model ?

- Diagnostics

A question about the emittance measurements. This depends on the beam profile, but what about the sensitivity of random errors? In particular if the blow up is decreased, the emittance measurements is more sensitive to these kinds of errors.

Simone: Turn by turn measurements might decrease these errors (if I understand correctly) with good sampling of the profile signal, however in the PS, for instance, the revolution frequency is too quick to provide turn-by-turn measurements.

A remark from Lutz: how to deal with space charge with ellipsoid beam, slightly tilted, in particular at the beginning of bends. As soon as the beam goes out of the mesh, the mesh should be redone.

- What about space charge model?

Steven: Accuracy of the space charge solver.

Error of space charge forces found to be 1% in Prior's presentation.

KV distribution can be unstable on long-term simulation.

- Space charge eigenmode (I am not sure I got everything)

Are there implemented in Madx ?

Frank's answer: not exactly, in Madx, not easy to use when distribution evolves.

However it is used from emittance computation.

General discussions.

Alexey pointed out that he is seeing in the code presentations a lot of incoherent effects, what about coherent effect?

Oliver Boine said that depends what is studied: coherent and incoherent goes together.

Ingo replied this depends of the studied physics. Example: Half integer resonance with space charge has a coherent motion, automatically (dipolar mode).

Alexey: for coasting beam, well understood. But many things has to be done for bunch beam, it would be nice to see all these effects, dipolar mode, impedance and so on.

Barbara Holzer wanted to answer to an earlier question about random error on FWS measurements. A big part of the error comes from eating of the wire for

instance, that she said is unpredictable. Question: is unpredictable mean random?

A question from Elias about “policy of loss”: how to proceed?
An answer was that people should use frozen PIC.