

Woody first gave an estimation on the dodecapole component of the shimmed 8Q32 quads. Woody estimated that amplitude dependent tune change should be limited less than 0.0005 for the tune jump requirement. From Wuzheng's 2-D magnet field simulation, the dodecapole component at 3 cm is only 0.6Gauss. 3 cm is about 2.5σ for a 90π normalized emittance at injection. Based on this field, Woody estimated the tune change from it would be less than 5×10^{-5} . So the tune shift is way below the requirement. Nick cautioned that the end fields contribute a significant part of the dodecapole component and a 3-D calculation is more proper to address it. Woody agreed. Currently, the mechanical design of magnet is on the waiting list. Joe has no designer to be assigned for this job. To speed up the project, we need to give this job a higher priority. After the design is done, then Woody will ask Wuzheng to do 3D field calculation. In answering Kevin and Nick's questions about Eddy current, Woody said that the coil is small and Eddy current in the coil can be handled with higher P/S voltage. Paul Sampson is looking for rooms to host the two P/S. To reduce the inductance, the P/S will be put as close to the magnets as possible.

The discussion continued on how to test the horizontal tune jump idea. Leif suggested to look the effect at lower energies. If Fanglei's spin tracking reflects the real polarization drop of 10% (accounted for both horizontal and vertical) before $G\gamma = 7.5$, then it should have a measurable effect and a test can be done by scanning the jump timing. In the early days when AC dipole was used, we could only maintain vertical chromaticity zero not both (ac dipole generated large oscillations, we could not maintain a zero orbit in the sextupoles). Mei asked if things changed now so that we could put both chromaticities to zero. This is a very interesting question. Near injection, the lattice is still distorted by the partial snakes (beta waves), which makes it hard to maintain orbits centered in the sextupoles, but how about at higher energies? The question is: is there any effort in past a few years (after installation of both partial snakes) to put both chromaticities to zero? If the effort failed, what was the problem? Mei asked Kevin if a model can predict the settings for such a lattice. Woody noticed that in the past, the coherent time from tunemeter kicker and chromaticity settings are not always consistent with each other. Anyway, it is interesting to study zero chromaticity by looking back the old elogs and modeling.

Next week, Kevin Smith will discuss the h=6 injection.

Haixin