

Fanglei first reported her progress on spin tracking with more particles at lower energies between $G\gamma = 4.5$ to 7.5 . As number of particles increases, the emittances calculated from the same random seed get closer to the desired values. In answering Phil's question, Fanglei estimated that the spin tracking of 200 particles in three emittance combinations took days. From the comparison of spin tracking with 50 particles and 200 particles, it showed that the polarization loss is qualitatively trending with the rms emittance values out of the distribution. However, for the 6% + 5.9% partial snakes, the transmission efficiencies of vertical and horizontal resonances are not additive. The reason we expect them to be additive is that the resonances should be isolated as the vertical and horizontal tunes are well separated. Waldo questioned if the coupling is an issue here. Thomas suggested to look at the polarization vs. $G\gamma$ curve to see if there is polarization drop at the location of horizontal resonance in tracking with vertical emittance only. Mei suggested to do tracking with all particles sitting at the ellipse of a fixed emittance. This way, the effect of emittance exchange would be easier to see. Thomas pointed out that these simulations are important to tell us if the isolated resonance assumption is correct or not.

Woody summarized the recent progress on horizontal tune jump quads (8Q32). By measuring the LC circuit oscillation frequency, he can measure the inductance of the real magnet. The measurement agreed reasonably with the simple model. He then showed the fields, inductances of a fantasy quads by shimming an 8Q32 quad and putting a three turn coil on the pole tip. If we use two of such rebuilt quads, the power supply requirements meet the spec of available power supplies. The tune jump of 0.03 can be achieved in $100\mu s$. He also showed the 2D magnet simulation done by Wuzheng for two different shimming and coil locations. The inductances of the two designs are different by a factor of three. This implies that the coil and lamination design are crucial to reach the desired performance. To cancel the beta wave the quads generate, the two quads will be placed a quarter wave length apart and powered with same polarity. Haixin will try to simulate the emittance growth with the two quads inserted.

Haixin