

Woody presented his progress in searching of the proper magnets and power supplies for the horizontal tune jump method. There are three types of existing magnets: the 8Q32 magnets, γ_t quads and the fast tune jump quads used in 1980s. The last one was not discussed today as Woody concerned about the beam aperture. Vincent recent analysis of ORM data of AGS with snakes on showed beta function of 100 meters. Based on measurements and calculations of the inductances of these magnets, Woody laid out the current and voltage requirements for these magnets. Leif asked if those inductance measurements were done with magnets themselves or with long cables included. It is believed that they are for the magnets with leads only.

For the 8Q32 quads, Woody calculated the inductances for four coils (and four half coils) in parallel. The required voltage goes down but current goes up. To further reduce the power supply requirement, Woody calculated the 8Q32 magnet with longitudinal shimming. It is estimated that for this scenario, four magnets can give 0.032 tune jump with 1000V, 900A. Woody suggested to ask Wuzheng to perform 2D magnet simulation to confirm his calculation since shimming is introduced.

For the γ_t quads, their inductances are high and a separate power supply system would be required. This implies a mode switch between pp and other species in the AGS. The six evenly distributed γ_t quads could also generate 18th harmonics at tune near integer. Fortunately, the vertical tune will be pulled away from integer. Woody also suspect that the ceramic chambers would be needed. So this is not likely a good solution. Nevertheless, Jianlin will check the inductance of these quads with and without cables either from measurement or documents.

Thomas asked if we can reverse the question: instead of asking what existing magnets can do for us, design a new (better to be single one, instead of four) quad which can fit in with the existing power supplies and meet our requirement. Woody calls it fantasy quad. It can be converted from the 8Q32 quad or build as a new one.

Haixin