Minutes of the bi-weekly Hall A G_E^n meeting
December 4, 2002

Present: Gordon Cates, Donal Day, Xiaodong Jiang, Doug Higinbotham, Nilanga Liyanage, Richard Madey, Kathy McCormick, Vladimir Nelyubin, Bodo Reitz, Albert Shahinyan, Bogdan Wojtsekhowski

The main topic of discussion at the meeting was Vladimir's MAFIA simulations of the field uniformity in the region of the polarized helium target.

1. MAFIA Simulations (Vladimir)
   The MAFIA simulation is being done in two parts: first looking at the field uniformity produced by two sets of Helmholtz coils and two parallel plates on either side of the polarized target, then adding a partial "box" around Bigbite to screen its leakage field in the region of the target. The goal of the simulation is to come up with a field clamp configuration which provides a uniform (gradient $<$ 20 mG/cm) magnetic field at the target region which can be used to orient the target spin vector.

   - Vladimir first shows the results of a simulation putting two parallel iron plates around the polarized helium target. The plates would be $\pm$ 1.2 m tall, 1/4" thick, placed $\sim$1 m apart. One of the plates has a $\pm$ 25cm vertical, $\pm$ 10 cm horizontal hole to accommodate the Bigbite acceptance. In the first iteration, there are two sets of Helmholtz coils, mounted on the inside face of the iron plates. One set of coils is concentric to the other, with the larger coils having a diameter of 2 m and the smaller coils 1.4 m.
   - With the four coil configuration described above, the field in the target region can be made uniform over a range of 40 cm. The gradient of the field is about 15 mG/cm. This coil configuration allows a $\pm$ 5° field adjustment.
   - Secondly, Vladimir discusses an idea for getting rid of the Helmholtz coils entirely. The idea is to make the 1/4" iron plates produce the holding field by wrapping coils of wire around their ends and powering the coils differently. This idea generates a lot of discussion. Vladimir will do a thorough simulation of this setup to see if it's workable. Gordon will discuss the effect of this on the target design with Al.