

Spin meeting minutes, 4/4/2007

Anatoli proposed a beam experiment in the whole injector chain to monitor emittance growth. The linac was tuned for high intensity proton run historically. Simulations (done by Deepak) show that emittances grow several times (jumping from 2π to $8-10\pi$) with current linac configuration. Similar simulations of SNS linac agree well with measurement so the simulation tool does have credibility. Since this emittance growth hurts luminosity and potentially polarization, we need to find cures for it. The simulations show that the growth is dominant by the growth in the LEBT (Low Energy Beam Transport) region caused by mismatch. There are several proposals to reduce the emittance growth, such as removing the fast chopper (which is indeed a valuable tool to change intensity), adding quads and moving the chopper to a different location, etc. All of them are not small jobs. To justify the modification of linac, Anatoli proposes to test if the emittance reduction can be maintained through linac, Booster and AGS. This can be done with high intensity source which can provide same intensity but various beam size by scraping beam heavily with slits. The test will be in two steps: one with beam down to the end of linac and check beam size with instrumentation there; one with beam injected into Booster. We will schedule time for this test. Thomas also suggests to redo test with half the strength of desired quad current with better accuracy.

Anatoli also reported that the source has been put back together during maintenance day and is producing polarized beam. Keith already got beam accelerated in the Booster. The AGS pp setup will continue when time is available. The job list starts with high tune ORM at extraction (no snake) followed by CNI polarimeter setup.

Haixin