LUMINOSITY and other issues

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This concerns a request that I have been discussing and WAZ suggested that I make a more formal version to Glenn and Fred. The issue is luminosity monitoring in high luminosity p-p collisions where the mean number of interactions is once per bunch crossing, 10MHz. Based on the work of the BB group, Sugitate and the late Kaimi, the present BB counters are adequate, I think the numbers were average of 1 count per interaction. Now at this high rate, it is impractical to trigger and read the DAQ every crossing just to accumulate the number of BB counts. What we need is to scale the BB counters, like I would have done in any of my previous experiments. The only complication is that we need the equivalent of 60 'scalers' for this purpose, one for each of the bunch crossings. Of course, we need both the total beam and the live beam (in all 60 cases) although you could argue that all we need is the overall total (ungated) beam, the overall total live beam, and the live beam in the 60 channels—a good discussion topic for the spin group. Additionally, we will have to take a sample of BB triggers in the regualr data stream, since we will have to correct the flux for multiple interactions (i.e. maybe we will reject events with multiple vertices, so we will also have to reject flux with multiple vertices) and other such corrections that we apply to the events.

I'm sure that the spin group and other groups will think of other uses for scalers, and I hope that this is included in our scope. If not, can you please include it.

Please let me know your comments and ideas. Please note that there are people from the PHENIX spin group (RIKEN and others) who might be able to contribute to this effort, perhaps even to supply money.

Issues from discussion with Bunce about Santa Fe
Leftover Issues from previous meetings

- Gottfried Sum Rule: $\bar{u}(x) \neq \bar{d}(x)$? How well do we do with $W^{\pm}$ using p+A, p+^{3}He compared to Drell-Yan? (This is unpolarized)
- Tests of I-spin invariance. Does $d(x)$ in neutron $= u(x)$ in proton. Needs p+A or p+^{3}He.
- Parity Violation in inclusive lepton production e, μ as a way to find $gg \rightarrow c\bar{c} \rightarrow l + \nu + X$ (decay violates Parity)
- **JETS in PHENIX** by leading particles, sums of leading particles, E_T in jet cone (with or without charged E_T being added in). **Who is looking?**
- Agreement of rates and sensitivities with STAR