X-Ray Beam Size Monitor (XBSM) and $B_s ightarrow \mu \mu$

During 2008-2009 worked on X-Ray Beam Size Monitor for hardware experience. Now working on CDF analysis measuring the $B_s \rightarrow \mu\mu$ branching fraction ($\mathcal{B}(B_s \rightarrow \mu\mu)$).

X-Ray Beam Size Monitor



- Part of CESR-TA project, a R&D project for the ILC
- Measure positron and electron vertical beam profile
- Measure profile bunch by bunch (4 ns spacing)
- Allows for measurements of beam instability due to electron cloud
- Low emmitance tuning feedback

$B_s \rightarrow \mu \mu$

- Analysis with CDF data 6 fb⁻¹
- $B_s \rightarrow \mu\mu$ is suppressed in SM (predicted $\mathcal{B}(B_s \rightarrow \mu\mu) = (3.42 \pm 0.54) \times 10^{-9})$
- Can set limits on Super Symmetry parameters $(\tan\beta)$
- Most recent analysis was on 2 fb⁻¹ of data and resulted in ${\cal B}(B_s o \mu\mu) < 5.8 imes 10^{-8}$ at 95% CL)
- Expecting a factor 2 improvement due to analysis improvements and increase in data sample