

Assessment of goal 1 progress and issues to be focused on

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Goal 1

Achievement of 37 nm beam size

- Demonstration of a compact final focus system based on local chromaticity correction

Assessment of Goal 1

- We confirmed IPBSM modulations ~ 0.35 , which correspond to ~ 60 nm assuming no systematic error. (numbers are not very accurate)
 - Since the systematic errors make apparent beam size large, ~ 60 nm is the upper limit of real beam size.
- Goal is 37 nm. Expected from emittance 12 pm and (almost) perfect chromaticity correction.
- Without chromaticity correction (sextupoles off), expected beam size is ~ 70 nm.
- Local chromaticity correction has been partly demonstrated.
- Reasons of the difference between the goal (37 nm) and the achieved result (~ 60 nm) have not been understood yet.

Issues to be focused on

- Possible reasons of the difference between the goal (37 nm) and the achieved result (~60 nm).
 - Larger emittance than designed 12 pm?
 - Multi-pole field error, which could not be corrected?
 - Wakefield effect (even at low intensity)?
 - Beam orbit jitter comparable to the beam size?
 - Error of the beam size monitor?
- All of above can be important and should be studied.
 - We cannot focused on only part of them. (?)