

Emittance (measured in the diagnostic region) increase as function of intensity (Woodley's slide 13)

$$\Delta\varepsilon[\text{pm}] \approx 2 \times N(\text{E9})$$

beta_y at IP = 0.1 mm, then, expected square of beam size increase at intensity N=1E10 is

$$\Delta\sigma^2(\text{from EXT } \Delta\varepsilon)[\text{nm}^2] \approx 2000 \quad (N=1\text{E}10)$$

Measured beam size at IP must have unknown errors (e.g. performance of the monitor), but apparent beam size increase ignoring the errors was roughly (Kubo's slide 25)

$$\Delta\sigma^2(\text{observed})[\text{nm}^2] > 10000 \quad (N=1\text{E}10)$$

suggesting 5 times stronger intensity dependence of the emittance than measured in EXT line.

The result might be affected significantly by unknown (or uncertain) errors. Please understand that we do not have any conclusion now, and more systematic experiment is being planned.

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