**Beam Tilt & TFC: Can we see a (MC) beam tilt?**

1. Plot $<b>$ vs $\phi$ for different $z$ (barrel) slices
2. Fit to standard form

$$<b> = r \sin(\phi + \phi_0) + c$$

(Here $c$ should be only a cross check.)

No offset or tilt: $r=0$
$\phi_0 = \text{meaningless}$

A beam offset: $r = \text{constant}$
$\phi_0 = \text{angle to beam center from } x\text{-axis}$

A beam tilt: $r = r(z) = m_r z + \eta$
$\phi_0 = \text{angle to beam center from } x\text{-axis}$
ZH-$\nu\nu bb$

no beam tilt

6 for barrels

3 summary

no tilt, expect $r = 0$

$\phi = \text{random}$
Tilt sample
(Lorenzo)
\( x, y = 0.5 \, \mu m/cm \)

so expect
\( m_r = 0.7 \, \mu m/cm \)
\( \phi = 2.35 \, \text{rad}(?) \)
\( c = 0.0 \)
Tilt sample, again

after applying online correction

expect

\( m_r = 0 \) \( \mu \text{m/cm} \)

\( \phi = \) random

find,

\( m \) consistent w/0!

Slightly better b
Looks encouraging

- see correct tilt using STT trigsim tracks

- after applying correction, see expected flat distribution for $r(z)$.

- concern: the no-tilt sample gives poor $\chi^2$ values for both fits. Why? Don’t know, but
  - p10 SMT MC problem, fixed in p11
  - bug in my code...

- work continues...