

# Update of flux systematic error

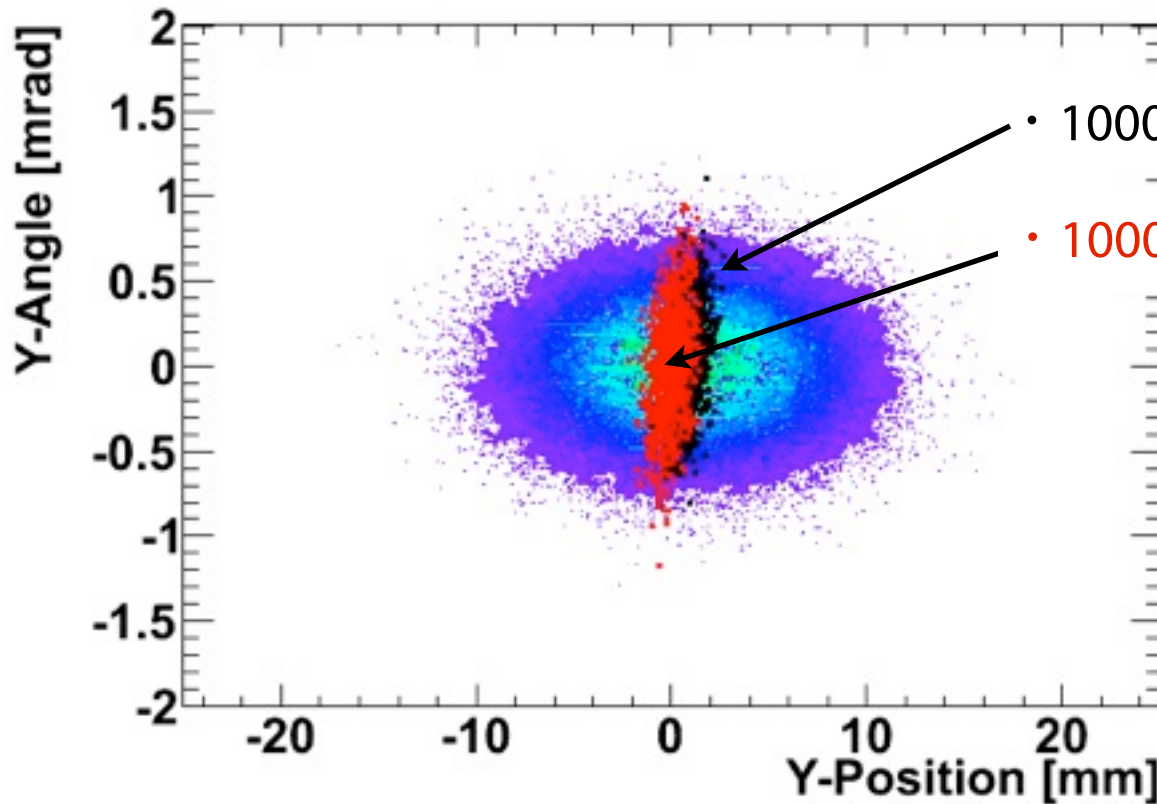
# Update for flux uncertainty due to proton beam & off-axis

- Update for flux uncertainty due to proton beam (p-beam)
  - For current uncertainty due to p-beam, consider only Run1 p-beam parameters.
  - It is going on to estimate of flux uncertainty by using Run2 beam uncertainty w/ the same method as estimation for Run1.
- Update for flux uncertainty due to off-axis angle (OA).
  - Current uncertainty estimated by only Run1 data → estimate by each Run period data.
- (Personal) time schedule : finalize at Dec. analysis meeting.

# Analysis status (p-beam)

- Make throwing samples of p-beam parameter varied within p-beam uncertainty and do reweighting flux → Estimate flux uncertainty.

Y-Y' phase space



• 1000 throwing by Run1 p-beam parameters.

• 1000 throwing by Run2 p-beam parameters

Other dots : using flux made with wide p-beam parameter

→ Large Y-angle variation compared to wide p-beam flux.

Plan to discard large Y-angle ( $>2\sigma$ ), or to make flux with larger p-beam Y-angle.

# Analysis status (OA)

- Now, I'm going to review the current error estimation by Matsuoka-san and the uncertainty of off-axis angle measured by INGRID in each Run period.
- In my analysis, not plan to use MUMON measurement.