The Beam Profile Analysis Using the first ever n3He beam data

The Algorithm:

- 1. Background signal is subtracted from average intensity.
- 2. M4 intensity is normalized by M1 intensity.
- 3. Centroid is calculated according to:

$$\overline{\mathbf{y}} = \frac{\sum \mathbf{y}_i \mathbf{A}_i}{\sum \mathbf{A}_i} =$$
$$\overline{\mathbf{x}} = \frac{\sum \mathbf{x}_i \mathbf{A}_i}{\sum \mathbf{A}_i} =$$

Result:

7x7 Grid : X: 10.002 cm Y: 12.0479 cm 9x10 Grid : X: 10.0282 cm Y:12.0403 cm

Distances are from home position.

A Typical Monitor-1(M1) Signal(To be used for normalization)



A typical Monitor-4(M4) Signal to be Analyzed



7x7 Grid with 3cm separation, background subtracted, beam normalized by M1



TGraph2D Surface Plot

7x7 Grid with 3cm separation, background subtracted, beam normalized (Top View)

Graph2D Surface Plot Centroid(10.002,12.0479)



X displacement(cm)



9x10 Grid with 2cm Separation, background subtracted and normalized by M1

9x10 Grid with 2cm separation, background subtracted, beam normalized (Top View)

Graph2D Surface Plot Centroid(10.002,12.0479)



X displacement(cm)