Event Monitor and Display for Muon Tomography Station

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Presentation Overview

- Research Motivation
- Event Display
- Theory
- Application: Coverage Distribution
- Event Monitor
- Live Event Monitor and Display
Research Motivation

- Makes research and analysis more approachable
- Sanity check for validity of results and station configuration
- Detector coverage
- Display incoming/outgoing path
Single Muon Event

Michael Phipps    Florida Institute of Technology
2d Projections of MTS

XZ Projection

YZ Projection
1000 Muon Events
Coverage: Total Intersecting Events

50000 Events -- 1636 Intersect Target

X Axis (mm) vs Z Axis (mm)

Y Axis (mm) vs Z Axis (mm)

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Coverage: Side Intersecting Events

50,000 Events -- 455 Intersect Target

X Axis (mm)

Y Axis (mm)

Z Axis (mm)

50,000 Events -- 455 Intersect Target

Z Axis (mm)
Coverage Distribution:
50,000 Events with a 50 mm^3 Target

<table>
<thead>
<tr>
<th>Target Location</th>
<th>Total Intersecting Events</th>
<th>Side Intersecting Events</th>
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</thead>
<tbody>
<tr>
<td>Top Left</td>
<td>1522</td>
<td>626</td>
</tr>
<tr>
<td>Top Center</td>
<td>2454</td>
<td>337</td>
</tr>
<tr>
<td>Top Right</td>
<td>1958</td>
<td>610</td>
</tr>
<tr>
<td>Middle Left</td>
<td>1192</td>
<td>300</td>
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<tr>
<td>Middle</td>
<td>3359</td>
<td>553</td>
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<tr>
<td>Middle Right</td>
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<td>455</td>
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<td>Bottom Left</td>
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<tr>
<td>Bottom Center</td>
<td>2446</td>
<td>285</td>
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<tr>
<td>Bottom Right</td>
<td>1777</td>
<td>470</td>
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</table>
Event Display + DQM

- Near Real Time
- Dynamic live display and monitoring program
- User friendly GUI that automatically updates as data is processed
Live Display Shell

Muon Tomography Station Event Display