$\sigma(\phi_0)$ [rad]

**ATLAS Simulation**

Single muons, $\mu = 0$

$\eta$

<table>
<thead>
<tr>
<th>$\eta$</th>
<th>0</th>
<th>0.5</th>
<th>1</th>
<th>1.5</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>3.5</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>True particle</td>
<td>$0$</td>
<td>$0.5$</td>
<td>$1$</td>
<td>$1.5$</td>
<td>$2$</td>
<td>$2.5$</td>
<td>$3$</td>
<td>$3.5$</td>
<td>$4$</td>
</tr>
</tbody>
</table>

- ITk $p_T = 1$ GeV
- ITk $p_T = 10$ GeV
- ITk $p_T = 100$ GeV

- Run 2 $p_T = 1$ GeV
- Run 2 $p_T = 10$ GeV
- Run 2 $p_T = 100$ GeV

$\sigma(\phi_0) = 1$ GeV

$\sigma(\phi_0) = 10$ GeV

$\sigma(\phi_0) = 100$ GeV

$\sigma(\phi_0) = 1$ GeV

$\sigma(\phi_0) = 10$ GeV

$\sigma(\phi_0) = 100$ GeV