To Do List

1) Confirm that 60 cm Aperture, 1.25 T channel with 50cm period is acceptable – ICOOL

2) Calculate neutron flux at Mini-cool station
   – MARS

3) Determine off-sign pions/muons flux at Mini-cool station – MARS/ICOOL

4) Determine proton flux at Mini-cool station
   – MARS/ICOOL
target station

1st phase rotation

mini-cooling

long drift

induction linac

buncher

cooling

proton beam

π

0  .3  6.3  48  64  218  359  366  408  485 meters
1.25 T channel with two 14cm gaps
Mars Simulation Results

1cm diameter, 30cm long Hg Target

Tablular protons are secondary protons only

Particles crossing downstream plane of target

<table>
<thead>
<tr>
<th>Particles/Incoming protons</th>
<th>e</th>
<th>μ</th>
<th>π</th>
<th>K</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>positives</td>
<td>0</td>
<td>0.02</td>
<td>1.76</td>
<td>0.05</td>
<td>0.73</td>
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<tr>
<td>negatives</td>
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<td>0.03</td>
<td>1.11</td>
<td>0.02</td>
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ICCOOL Simulation Results

Induction Linac Phase Rotation

Particles entering 1st mini-cool LH cell

Positive muon collection

<table>
<thead>
<tr>
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<th>μ</th>
<th>π</th>
<th>K</th>
<th>p</th>
</tr>
</thead>
<tbody>
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<td>0.95</td>
<td>0.05</td>
<td>0</td>
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Negative muon collection

<table>
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<th>Particles/Incoming protons</th>
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<td>0</td>
<td>0.38</td>
</tr>
<tr>
<td>negatives</td>
<td>0.04</td>
<td>0.79</td>
<td>0.01</td>
<td>0</td>
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</tr>
</tbody>
</table>
Power deposition in Mini-cool cells

Assume:

1 MW 24 GeV proton beam

175 cm Mini-cool LH cell

Positive muon collection

\[
\begin{array}{ll}
\text{positives} & 12.04 \\
\text{negatives} & 1.25 \\
\text{total} & 13.29 \\
\end{array}
\]

Negative muon collection

\[
\begin{array}{ll}
\text{positives} & 11.56 \\
\text{negatives} & 1.75 \\
\text{total} & 13.31 \\
\end{array}
\]