FINAL 2003 Polarization

rescaling factor

BLUE

comparison offline / online \( \times 1.09 \)
recalibration \( \times 1.23 \)
overall \( P_{\text{final}} = P_{\text{online}} \times 1.34 \)

YELLOW

comparison offline / online \( \times 1.05 \)
recalibration \( \times 1.21 \)
overall \( P_{\text{final}} = P_{\text{online}} \times 1.27 \)

no bunch selections implemented
STAR and PHENIX use different bunch selections and can have different factors
**Final 2003 Blue Polarization @ 100 GeV**

- Reanalysis of online data: $\uparrow 9.0\%$
- $A_N$ renormalization: $\uparrow 23.0\%$
- $\Rightarrow$ Rescale by 1.34
- Systematic error: 19\%

![Graph showing POL BLUE SCALER 100GeV vs Fill# with 'final' and 'online' labels.](image-url)
Final 2003 Yellow Polarization @ 100 GeV

reanalysis of online data $\uparrow$ 5.0%
$A_N$ renormalization $\uparrow$ 21.0%  $\Rightarrow$ rescale by 1.27
systematic error 17%

![Graph showing data points with error bars]
FINAL 2004 Polarization

rescaling factor

BLUE

\[
\begin{align*}
\text{fill } # \leq 5234 & \quad P_{\text{final}} = P_{\text{online}} \times 1.25 \\
\text{fill } # \geq 5235 & \quad P_{\text{final}} = P_{\text{online}} \times 1.08
\end{align*}
\]

YELLOW

\[
\begin{align*}
\text{fill } # \leq 5234 & \quad P_{\text{final}} = P_{\text{online}} \times 1.21 \\
\text{fill } # \geq 5235 & \quad P_{\text{final}} = P_{\text{online}} \times 1.11
\end{align*}
\]

from comparison offline / online & recalibration
no bunch selection implemented
Final $P_{\text{BEAM}}$ from JET 2004

all 90 runs

$P_{\text{BEAM}} = 0.392 \pm 0.021 \text{ (stat)} \pm 0.008 \text{ ($\Delta P_{\text{TARGET}}$)} \pm 0.014 \text{ (sys)} = 0.392 \pm 0.026$

$\Delta P_{\text{BEAM}} / P_{\text{BEAM}} = 6.6 \%$

tot sys = 0.016

43 runs – carbon polarimeter run in event mode

$P_{\text{BEAM}} = 0.386 \pm 0.029 \text{ (stat)} \pm 0.008 \text{ ($\Delta P_{\text{TARGET}}$)} \pm 0.014 \text{ (sys)} = 0.386 \pm 0.033$

$\Delta P_{\text{BEAM}} / P_{\text{BEAM}} = 8.5 \%$
Errors: JET Calibration

- jet normalization: 8.5 %
- energy scale: 9.8 %
- event selection: 3.0 %
- sys. of measurement: 0.0 %

Channel by channel; no polarization profile.
Negligible compared to statistical errors.

TOTAL: 13.3 %
# Errors 2003

<table>
<thead>
<tr>
<th>Source of Error</th>
<th>Blue</th>
<th>Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>jet calibration</td>
<td>13.3 %</td>
<td>13.3 %</td>
</tr>
<tr>
<td>offline / online</td>
<td>7.3 %</td>
<td>9.2 %</td>
</tr>
<tr>
<td>energy correction</td>
<td>0.0 %</td>
<td>0.0 %</td>
</tr>
<tr>
<td>event selection</td>
<td>4.0 %</td>
<td>2.0 %</td>
</tr>
<tr>
<td>sys. of measurement channel by channel;</td>
<td>10.0 %</td>
<td>4.0 %</td>
</tr>
<tr>
<td>no polarization profile</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** 18.6 % 16.8 %
## Errors 2004

<table>
<thead>
<tr>
<th>Source</th>
<th>Blue</th>
<th>Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>jet calibration</strong></td>
<td>9.0 %</td>
<td>13.3 %</td>
</tr>
<tr>
<td>(energy correction not included for Blue)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>offline / online</strong></td>
<td>7.4 %</td>
<td>9.3 %</td>
</tr>
<tr>
<td>(most measurements were “scaler” mode during physics run)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>energy correction</strong></td>
<td>0.0 %</td>
<td>0.0 %</td>
</tr>
<tr>
<td>(same method as “calibration”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>event selection</strong></td>
<td>3.0 %</td>
<td>3.3 %</td>
</tr>
<tr>
<td><strong>sys. of measurement</strong></td>
<td>0.0 %</td>
<td>0.0 %</td>
</tr>
<tr>
<td>(channel by channel; no polarization profile)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td>12.0 %</td>
<td>16.6 %</td>
</tr>
</tbody>
</table>