

# nn $\Lambda$ analysis meeting (JLab E12-17-003)

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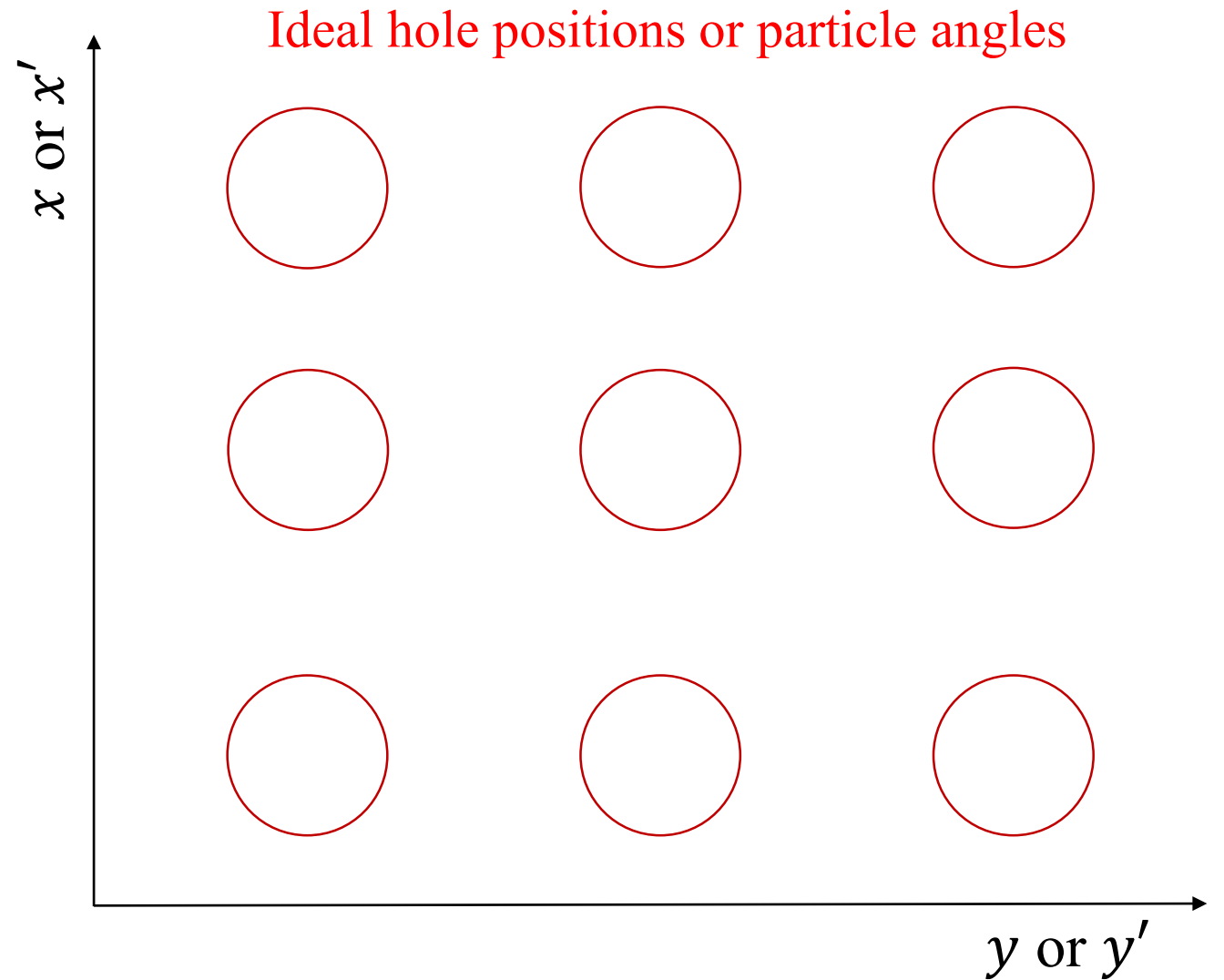


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# Angle resolution estimation by SS data



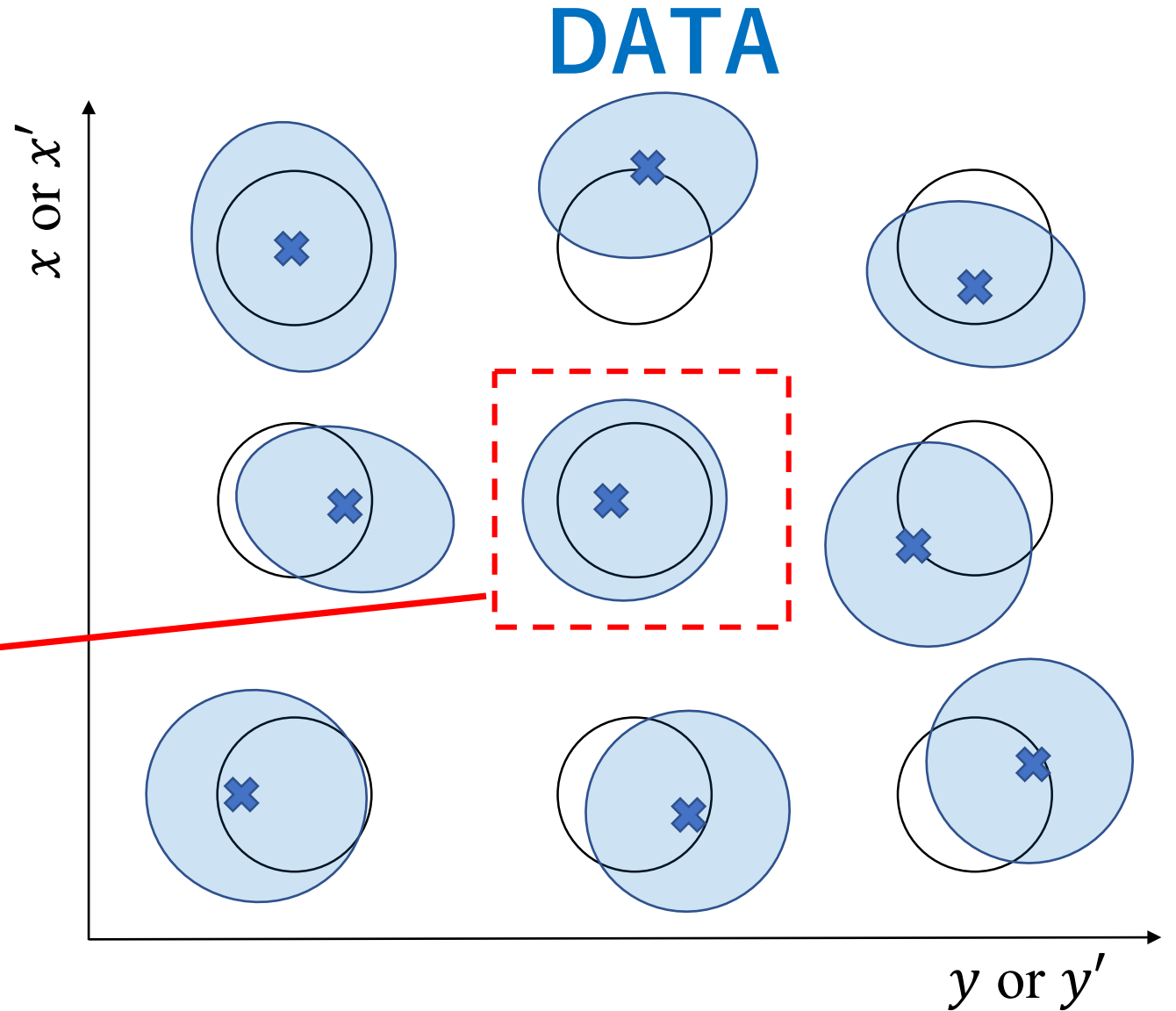
# Angle resolution estimation by SS data

Reference:

[https://www-nh.scphys.kyoto-u.ac.jp/~gogami/e12-17-003/meeting/analysis/src/nmL\\_AnalysisNote\\_20200501\\_gogami.pdf](https://www-nh.scphys.kyoto-u.ac.jp/~gogami/e12-17-003/meeting/analysis/src/nmL_AnalysisNote_20200501_gogami.pdf)

Suzuki's estimation shown in the previous meeting:

- $\Delta x' = \Delta \left( \frac{p_x}{p_z} \right) = 2.2 \times 10^{-3}$
- $\Delta y' = \Delta \left( \frac{p_y}{p_z} \right) = 0.8 \times 10^{-3}$



# Angle resolution estimation by SS data

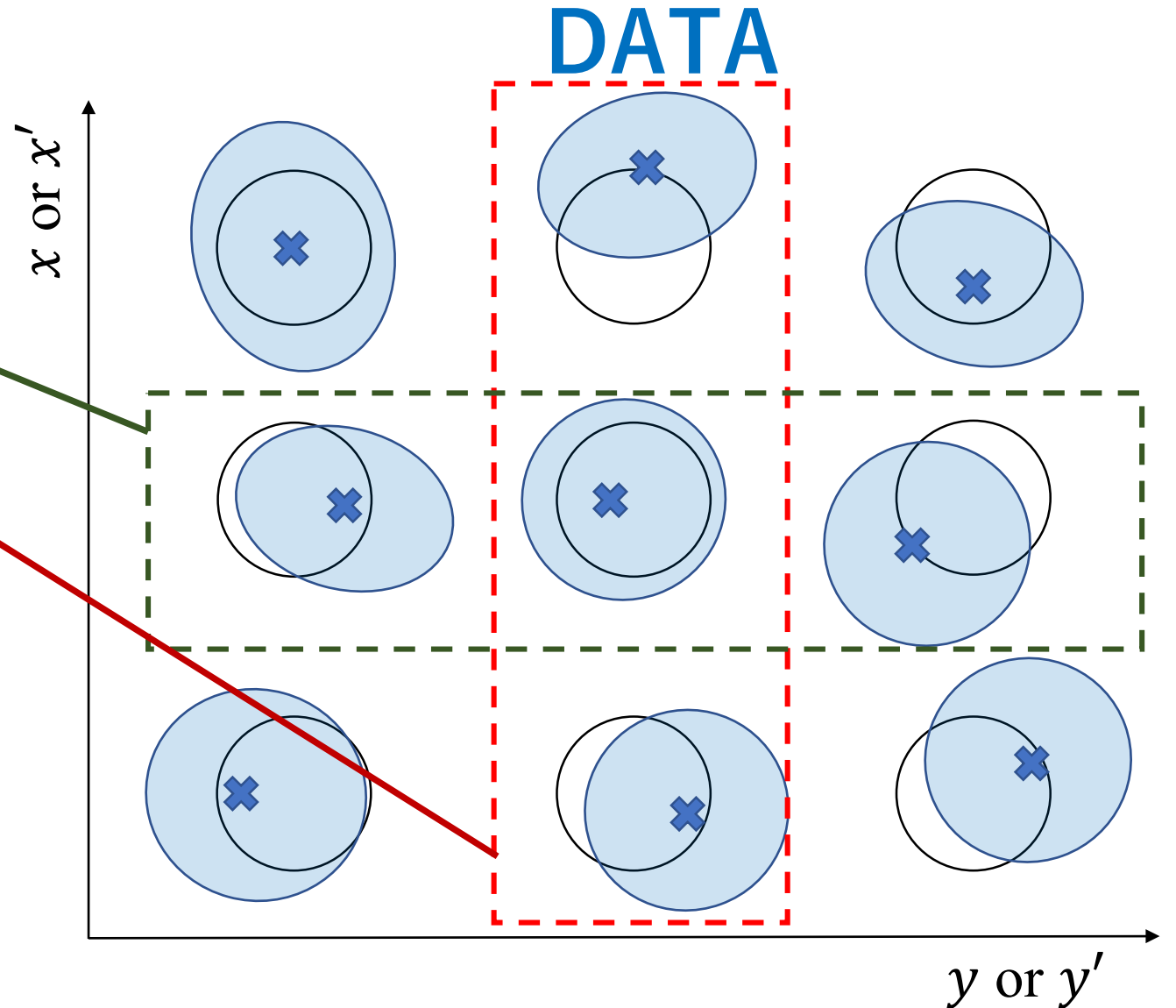
When all holes in each column or row were used for estimation:

$$\begin{aligned} \bullet \Delta x' &= \Delta \left( \frac{p_x}{p_z} \right) = XX \times 10^{-3} \\ \bullet \Delta y' &= \Delta \left( \frac{p_y}{p_z} \right) = XX \times 10^{-3} \end{aligned}$$

“Effective precisions” that take  
“accuracies” into account in the acceptance



Effective precision: **Suzuki's talk**  
Accuracy: **Kosuke's talk**



# $\Delta x'$ and $\Delta y' \rightarrow \Delta\theta$

// ===== The way of Kyoto ===== //

```
dxp1 = xpc/(1.0+xpc*xpc+ypc*ypc)/sqrt(xpc*xpc+ypc*ypc)*xpreso;
```

```
dyp1 = ypc/(1.0+xpc*xpc+ypc*ypc)/sqrt(xpc*xpc+ypc*ypc)*ypreso;
```

// ===== The way of Hampton ===== //

```
double temp = -ypc*sin(angc)+cos(angc);
```

```
double temp2= temp/sqrt(1.0+xpc*xpc+ypc*ypc);
```

```
double temp3= sin(angc)*(1.0+xpc*xpc) + ypc * cos(angc);
```

```
dxp2 = -1.0/sqrt(1.0-temp2*temp2) * temp * (-1.0*xpc*pow(1.0+xpc*xpc+ypc*ypc,-3./2.));
```

```
dxp2 = dxp2 * xpreso;
```

```
dyp2 = -1.0/sqrt(1.0-temp2*temp2) * temp3 * (-1.0*pow(1.0+xpc*xpc+ypc*ypc,-3./2.));
```

```
dyp2 = dyp2 * ypreso;
```

*Kyoto values*

xpreso = 0.0025, ypreso = 0.0012:

- Way of Kyoto: 0.00113952
- Way of Hampton: 0.00113952

Conversion equations that were **only** used for resolution estimation:

**Kyoto:**

[https://wiki.jlab.org/tegwiki/images/4/4e/JLabMeeting\\_20210331\\_gogami\\_2.pdf](https://wiki.jlab.org/tegwiki/images/4/4e/JLabMeeting_20210331_gogami_2.pdf)

**Hampton:**

[https://wiki.jlab.org/tegwiki/images/e/e4/Angle\\_conversion.pdf](https://wiki.jlab.org/tegwiki/images/e/e4/Angle_conversion.pdf)

*Hampton values*

xpreso = 0.0011, ypreso = 0.0034:

- Way of Kyoto: 0.00322864
- Way of Hampton: 0.00322864

**$\Delta\theta$  is exactly the same when the same assumption is used**