$r \equiv$ tag. ratio

$$N_{beam} \rightarrow \underbrace{N_{e^+e^-}}_{= r N_{beam}} + \underbrace{N_{accid.}}_{\equiv p_A N_{beam}}$$

where $p_A$ – probab. to get accidental

$$\begin{tikzcd} N_{beam} \arrow[r] \arrow[d] \arrow[dr] & N_{beam}(\text{no } PS) \\ N_{e^+e^-} & N_{accid.} \end{tikzcd}$$

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in the data:

$p_{MOR} = \frac{1}{50,000}$ (MOR prescale factor)

$p_{PS} = \frac{1}{3,500}$ (PS prescale factor)

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$$p_{MOR} * N_{beam}(\text{no } PS) + (p_{MOR} \text{ OR } p_{PS})(N_{e^+e^-} + N_{accid.})$$

---

$$(p_{MOR} \text{ OR } p_{PS}) = 1 - (1 - p_{MOR})(1 - p_{PS}) \approx$$

$$\approx p_{MOR} + p_{PS}$$

What do we have in the data stream:

$$P_{NOR} \cdot N_{beam}(\text{no } PS) + (P_{NOR} + P_{PS})(N_{e^+e^-} + N_{acc})$$

Multiply $N_{beam}(\text{no } PS)$ by $\dfrac{P_{NOR} + P_{PS}}{P_{NOR}}$

Then:

$$(P_{NOR} + P_{PS})\left\{N'_{beam}(\text{no } PS) + N_{e^+e^-} + N_{acc}\right\}$$

Then:

$$\boxed{r = \frac{N_{e^+e^-}}{\underbrace{\frac{P_{NOR} + P_{PS}}{P_{NOR}}}_{\frac{107}{7}} N_{beam}(\text{no } P) + N_{e^+e^-} + N_{acc}}}$$

?