DATA ANALYSIS OF PICTURES FROM HYDROGEN BUBBLE CHAMBERS

and some results of the analysis of the reaction $\bar{p} + p \rightarrow \gamma^0 + \bar{\gamma}^0 + n\pi^0$

with 3.6 GeV/c primary momentum

ERRATA

Page 3, line 12, read:
the track of the $\mu^+$ is about one cm in space whereafter it decays giving an . . .

P. 3, line 29, read:
A practical example is shown in Fig. 5 . . .

P. 4, line 12, read:
scanning has no statistical significance in this special case . . . In the general . . .

P. 5, line 2, read:
concept of detection probability, which can be treated by statistical . . .

P. 6, line 8, read:

i) $P(x) =$ the probability density. (If $x$ can take discrete values . . .

P. 7, line 11, read:
\[ \hat{\eta}_j^{\text{lower}} = \eta_j - \sigma(\hat{\eta}_j) = \eta_j - \sqrt{\frac{\eta_j(1 - \eta_j)}{m_i}} \]

P. 7, line 12, read:
\[ \hat{\eta}_j^{\text{upper}} = \eta_j + \sigma(\hat{\eta}_j) = \eta_j + \sqrt{\frac{\eta_j(1 - \eta_j)}{m_i}} \]

P. 8, line 3, read:
the distribution of $\hat{\eta}$ is not simply binomial . . .

7312/dac
which like Eq. (2.4) gives the spread of $\hat{N}$ in terms of the a priori ...

The mean life of $\Lambda^0$ read: $\sim 2.6 \cdot 10^{-10}$ sec.

The lifetime of $\Lambda^0$ and $\Lambda_0^0$ is taken from our own analysis (p. 50). Other results indicate $\sim 2.4 \cdot 10^{-10}$ sec.

full stop at the end of the line

of the $v^0$ was more than 50°, then this $v^0$ was not measured.

between the steps, and parts of the chain may be repeated or replaced ...

measured, how many points should be taken and how they should be distributed etc.

of the chamber. But the formation of bubbles is a result of ...

All capital Z's in the formulae are replaced by small z's

of the transposed of this matrix is called $\mathbf{F}^T$, the internal error matrix ...

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P. 38, line 18, read:

\[ E_1^2 + E_2^2 - P_1^2 - P_2^2 + 2 \sqrt{E_1^2 - P_1^2} \sqrt{E_2^2 - P_2^2} = (\sqrt{E_1^2 - P_1^2} + \sqrt{E_2^2 - P_2^2})^2 \]

\[ = (M_1 + M_2)^2 \]

P. 40, line 9, read:

hypothesis \( p + p \rightarrow \Lambda^0 + \Lambda^0 + \pi^0 \) were in both cases acceptable. Although . . .

P. 40, line 13 read:

In a third case Fit 33 occurred when trying \( X^0 \) to be a \( \gamma \). The fit for . . .

P. 41, line 1, read:

e). Fit 31 means non-convergence of the constraints. The effect is strongly correlated to Fit 32, but Fit 31 will be tested . . .

P. 41, line 9, read:

f) Fit 21 occurs . . .

P. 42, line 17, read:

ii) The decay happens very near the main interaction point.

There is thus a certain interval . . .

P. 42, line 30 read:

which can be read by the statistics programme SUMX,

P. 43, line 7, read:

\[ P(t^* > t^*_0) = \int_{t^*_0}^{\infty} \frac{1}{\lambda} e^{-t^*/\lambda} dt^* = e^{-t^*_0/\lambda} \]

P. 44, Eq. (7.2), read:

\[ P(L_0 \leq L \leq L_p) = e^{-L_p - \frac{L_o}{\sigma_p}} = e^{-L_p - \frac{L_o}{\sigma_p}} (1 - e^{-\frac{L_p - L_o}{\sigma_p}}) \]

7312/dac
P. 44, line 7, read:
\[ W = e^{-\frac{L}{\alpha P}} \left( 1 - e^{-\frac{L_p - L_e}{\alpha P}} \right) \] (7.3)

P. 46, line 10, read:
agree with the mass of a very short-lived particle or "resonance", it is .....

P. 46, line 14, read:
By plotting the effective mass of various combinations .....

P. 47, line 20 read:
\* If \( (L \cos \lambda) \) is the projected length of the measured part of the track, and if .....

P. 47, line 23, read:
The idea of the external error defined above is that the error on \( (L \cos \lambda) \) is .....

P. 47, line 27, read:
\** An analysis of internal errors of angles is given in Chapter IX.

P. 47, line 28, read:
\*** The meaning of \( S^2 \) is described in Chapter IX.

P. 49, line 9, read:
is Gaussian distributed with mean equal to zero .....

P. 49, lines 25-26, read:
The data from Figs. 11a, 11b, 12a, 12b and 12c are consistent with the statement .....

P. 58, line 6, read:
The errors will depend critically on the validity of the assumed .....

P. 60, line 17, read:
\[ z = \rho \tan \alpha + \int_a \... \]

P. 60, line 25, read:
\[ \tan \alpha_i = \sin \alpha_i \left( 1 - \sin^2 \alpha_i \right)^{-1/2} = \sin \alpha_i \left( \mu_i^2 - \sin^2 \alpha_i \right)^{-1/2} \]
approximation for $\alpha_1$ is taken to be: $\arctan \left[ d_n (R - z)^{-1} \right]$. The

x) $\Delta L$ being the length of each step of the simulation. (The

and azimuth, $\phi$, were studied and the following quantities were . . .

$\Delta (1/\rho)$ by $\sigma (1/\rho)$

$\Delta \lambda$ by $\sigma (\lambda)$

$\Delta \phi$ by $\sigma (\phi)$

function of the momentum should be about as shown in Fig. 21b, where

proton-antiproton annihilation** have been measured many times, with

**Fig. 25 shows a photograph of the annihilation in question.

$$= \frac{1}{2} \sum_{i=1}^{n} \left[ (\beta_i^2 - 1)\sigma_i^2(P_i) - \sigma_i^2(\lambda_i) - 2\rho_i^2 \cos^2 \lambda_i \sin^2 \phi_i + \sigma_i^2(\phi_i) \right]$$
Fig 21b

Measured length as function of pion momentum corresponding to constant $s^2$

Artificial tracks without measurement errors