Appendix I: The Pearson Type I Distribution

3. CDF Software

3.4 Output

2.3 Special Resolution: Definitions

1. Introduction

1. CMA (CMAG) Calibration Summary Report

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Partial scan of original hardcopy (available on request) supplied
1. INTRODUCTION

The first step of the LCT analysis was an automatic analysis of the text. This was performed on the entire document, including figures and tables. The analysis was conducted using OCR technology to extract and process the text. This was done with the goal of creating a structured and searchable representation of the content.

The analysis of the LCTs is a joint effort of the parties involved. The analysis was performed by a team of experts from different fields, including linguistics, computer science, and data analysis. The team worked together to ensure that the analysis was comprehensive and accurate.

The analysis of the LCTs is a complex task that requires a deep understanding of the subject matter. The team of experts worked tirelessly to ensure that the analysis was thorough and detailed.

The analysis of the LCTs is an ongoing process, and the team of experts continues to work on improving the analysis and expanding its scope. The analysis is an important tool for understanding the content of the document, and it is expected to be a valuable resource for future research.
### Table 2.1: Parameters for the CAM Position Grid

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>X0, Y0</td>
<td></td>
</tr>
<tr>
<td>X1, Y1</td>
<td></td>
</tr>
</tbody>
</table>

The three spot positions provided in the CCF outside the grid are updated

The three positions are obtained by solving the equations given the values of X0, Y0, and X1.

Note that the X0, Y0 coordinates are in L units.

The values of the grid parameters are given below.

### Parameters

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

The grid parameters are consistent with the current information.

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### Calculation

- The grid parameters are calculated as follows:
  - X = (X0 + X1) / 2
  - Y = (Y0 + Y1) / 2

The grid parameters are consistent with the current information.

### Grid Parameters

<table>
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<td></td>
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</table>

The grid parameters are consistent with the current information.
In practice, the entropy associated with the image distribution is a 2D array.

\[
P_{\text{PSF}}(r) = \frac{1}{N \times N} \sum_{x=1}^{N} \sum_{y=1}^{N} f(x, y) \times \left( r - \sqrt{(x-M)^2 + (y-M)^2} \right) \]

where

\[
M = \frac{1}{2} \left( \frac{N}{2} + 1 \right)
\]

and \( f(x, y) \) is the image intensity at pixel \( (x, y) \).

The point spread function (PSF) is defined as the kernel of the 2D convolution of the image with a 2D Gaussian function. The resultant image is the convolution of the original image with the PSF.

The PSF is used to model the blurring effect of the imaging system on the original image. The PSF is a 2D array whose values are non-negative and integrate to 1. The center of the PSF is located at the origin of the coordinate system.

The PSF is often approximated by a Gaussian function:

\[
P_{\text{PSF}}(r) = \frac{1}{2\pi \sigma^2} \exp\left(-\frac{r^2}{2\sigma^2}\right)
\]

where \( \sigma \) is the standard deviation of the Gaussian function.

The PSF is used in image deconvolution to recover the original image from the blurred image. The deconvolution process involves dividing the blurred image by the PSF, which can be computationally expensive and may introduce noise into the recovered image.

In practice, the PSF is estimated from the data and used to deblur the image. The PSF can also be used to assess the quality of the imaging system.
The present chapter is no need to use this space, which is
This information is contained in data Type C of the CCF.

2.4.2 Miscellaneous

This analysis is not yet finalized. The final implementation
field of view were accumulated and displayed on the screen.
Using a selected list of background runs, images of the full
does not produce images of the full FOV.
In this case, the full run data were accessed, since LIMA
The present analysis was done in 1950 by LC.
This information is contained in data Type C of the CCF.

2.4.1 Hot Spots
The angle of the distribution is $\theta_x = \phi_0(x)$. Note that $\phi_0(x)$ is the angle of the product of $x$. The parameters on which the fits were made:

$$\mu$$

$\sigma$ is the standard deviation of the distribution.

$$\varphi(x)$$

is the original function and corresponds to the peak of the distribution.

$$\mu$$

is the number of counts in the peak of the SS.

$$\sigma$$

is the width of the distribution.

We use a modified Pearson distribution

$$
\begin{aligned}
\phi(x) &= \frac{2}{\sigma^2} \left( \frac{(x - \mu)^2}{\sigma^2} - 1 \right) \\
&= \frac{1}{\sigma^2} \left( \frac{(x - \mu)^2}{\sigma^2} + 1 \right) \\
&= \frac{1}{\sigma^2} \left( \frac{(x - \mu)^2}{\sigma^2} + 1 \right)
\end{aligned}
$$

as the complete beta function $B(x, \sigma)$. The incomplete beta

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where \( \Omega_0 = a_1 - X_0 \) which leads to \( B_0(a,b)\frac{1}{2} B_0(a,b) = \frac{1}{2} \epsilon \).

\[
\frac{\Omega_0}{a_1 + a_2} \int_0^{1-t} (1-t)^{b-1} dt = \frac{1}{2}
\]

which can be solved numerically.

The efficiency correction for a given ATC \( T \) is (see 2.2.4).

\[
\text{IF } L = X_0 - a_1, \quad EC = 1 - L_a \quad \text{with } T_a = \frac{T - X_0 + a_1}{a_1 + a_2}
\]

\[
\text{IF } L = 0, \quad EC = 1 - L_a \quad \text{with } L_a = \frac{a_1 - X_0}{a_1 + a_2}
\]

(NB. If \( T_a < 0 \) or \( T_a > 1 \) \( EC = 1 \)).

Since the observed distribution of EC vs SS median looks very regular, even within the large range of values of \( X_0, a_1, m_1, m_2 \) present in the data, one can suppose that the EC vs SS median relation is independent of the parameters \( X_0, a_1, m_1, m_2 \).

This is instead NOT the case, as it is proved by some numerical simulations. This means that some hidden relation among the Pearson parameters, although not easily visible, should exist.

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**Appendix 2: CMA Ground Calibration Report**

**Sample of the CCF Content**

The content of a number of CCF position grids (the whole of them being too voluminous) is presented in the following pages.

For each grid, a description line is added with the following format:

\[ r_{HH}(PP pp)(PP pp)(PP pp) \] where

\( r, h \) are the record and half-record of the relevant data type containing the grid. PP is the value of parameter PP (e.g., energy, sum signal, count rate) to which the grid refers.

The following data is provided:

**Data type C1:** it is intended to add this as soon as it is available.

- **C2:** the 1st, 2nd, 3rd, and 5th out of 5 grids.
- **C3:** as C2.
- **C4:** the 1st and last of the 5 grids.
- **C5:** as C4.
- **C6:** Four grids at different countrates (no energy dependency)

**C7:** " " " " (energy dependency is very mild; see 2.3.2).

**C8:** as C7.

**C9:** as C7.

**CE:** The four grids at zero countrate for the four energies. Moreover four grids at a fixed energy for 4 selected countrates. All grids appear once for SS median, once for SS H/E.

**CF:** Four grids for different some signal medians for acceptance level 50%; the same for 90% level.

NB: All values (grid AND parameters) are in the CCF units (see PDT Handbook).