of the sample median approaches 1 [4

32.1.3. *The method of least squares*:

The

32.1.4. *Propagation of errors*:

Consider a set of quantities $\boldsymbol{\theta} = (\theta_1 \quad \theta)$ and a set of functions

Rejecting if it is true is called an error of the rst kind. The probability for this to occur is called the *signi cance level* observed with the actual data. For example, if is de ned such that large values

communicate as objectively as possible the result of the experiment;

provide an interval that is constructed to cover the true value of the parameter with a speci ed probability;

provide the information needed by the consumer of the result to draw conclusions about the parameter or to make a particular decision;

draw conclusions about the parameter that incorporate stated prior beliefs.

With a su ciently large data sample, the point estimate and standard deviation (or for the multiparameter case, the parameter estimates and covariance matrix) satisfy essentially all of on bgoals Ff dta tsmp pno-343(tsingl)-3419(eteh)-332d

32.3.1. *The Bayesian approach*:

Suppose the outcome of the experiment is characterized by a vector of data

If a parameter is constrained to be non-negative, then the prior p.d.f. can simply be set to zero for negative values. An important example is the case of a Poisson variable which counts signal events with unknown mean

This is illustrated in Fig. 32.3: a horizontal line segment $[\ _1(\theta\ \alpha)\quad _2(\theta\ \alpha)]$ is drawn for representative values of θ. The union of such intervals for all values of θ, designated *ratio ordering*

Table 32.1: Area of the tails α outside δ from the mean of a Gaussian distribution.

α (%)	δ	α (%)	δ
31.73	1σ	20	1.28σ

We can set a one-sided (upper or lower) limit by excluding above $+\delta$ (or bew $-\delta$). The values of α for such are half the values Tabe 32.1.

In ad to Eq. (32.43), α an δ are also re by the cmu1806ative distribution function for the ^{2} distribution,

$$\alpha = 1 - \quad (\; ^2; \;) \tag{32 44}$$

for $^2 = (\delta \;\; \sigma)^2$ an $= 1$egree of freedom. Te5(i)-2(s)-327(c)4(an)-327(b)-26(e)-327(obe5(tain)5(ed

Fr multivariate measurements of, say, parameter estimates $\widehat{\boldsymbol{\theta}} = (\widehat{\theta}$

$1 \quad \widehat{\theta}$

log-likelihood functions ln $(\boldsymbol{\theta})$, then the combined log-likelihood function is simply the sum,

$$\ln \quad (\boldsymbol{\theta}) = \sum_{=1}^{N} \ln$$

Table 32.3: Lower and upper (one-sided) limits for the mean ν of a Poisson

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