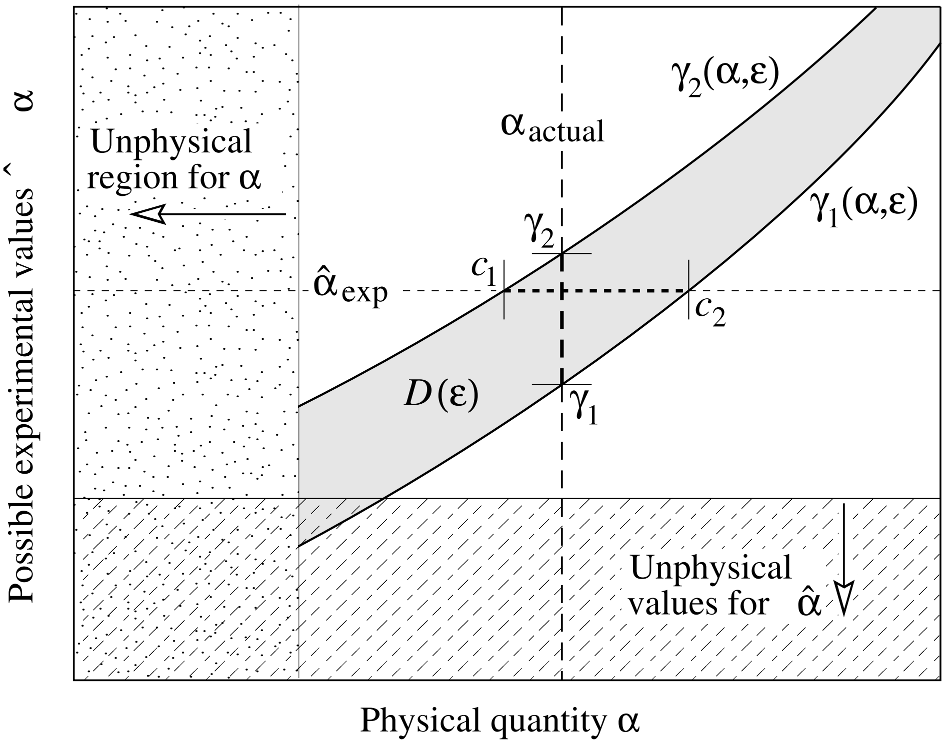

Figure 17.1: Confidence intervals for a single unknown parameter α. One might think of the p.d.f. $f(\widehat{\alpha};\alpha)$ as being plotted out of the paper as a function of $\widehat{\alpha}$ along each vertical line of constant α. The domain $D(\varepsilon)$ contains a fraction $1-\varepsilon$ of the area under each of these functions. Since $D(\varepsilon)$ cannot be extended beyond the physical regions for α, it is possible that at least c_1 cannot be defined (see Sec. 17.5.3.)

where $\widehat{\mu}$ is the estimator for μ and the interval size is 2δ. If $\delta \equiv \text{Var}(\widehat{\mu}) \equiv \sigma$, the interval describes *standard error* with $1-\varepsilon = 68.27\%$. Confidence coefficients ε for other frequently used choices of δ are given in Table 17.1.

Table 17.1: Area of the tails ε outside $\pm\delta$ from the mean of a Gaussian distribution.

ε (%)	δ	ε (%)	δ
31.73	1σ	20	1.28σ
4.55	2σ	10	1.64σ
0.27	3σ	5	1.96σ
6.3×10^{-3}	4σ	1	2.58σ
5.7×10^{-5}	5σ	0.1	3.29σ
2.0×10^{-7}	6σ	0.01	3.89σ

For multivariate α the standard error ellipse for the pair $(\widehat{\alpha}_m, \widehat{\alpha}_n)$, including pairwise correlations, appears as in in Fig. 17.3.