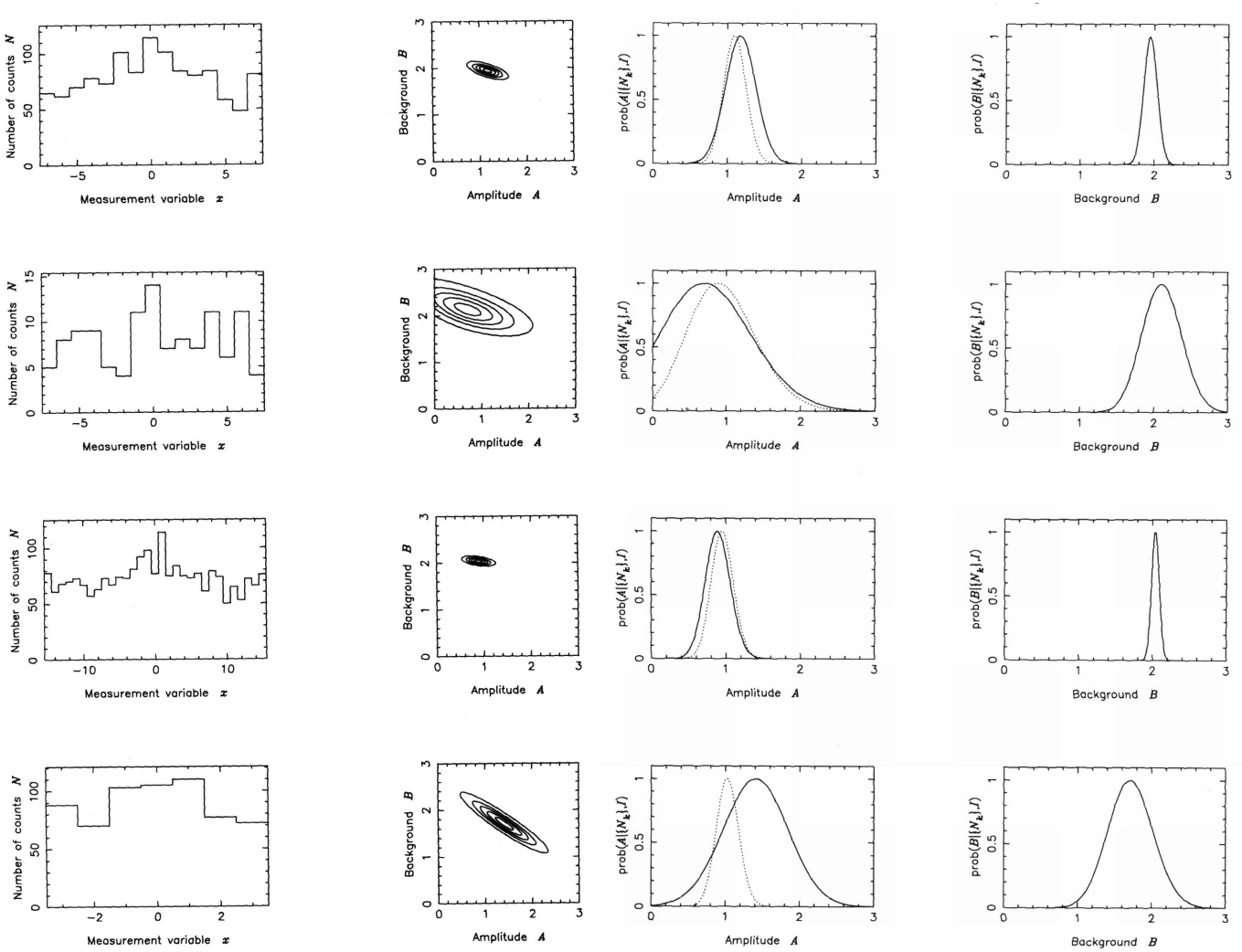
Estimating two parameters in the presence of Poisson noise. Column 1 shows four sets of data, each one represents photon counts, N, from a spectral emission line imaged onto a CCD, with x representing frequency (or pixel number). The underlying line has a Gaussian profile, centred at x=0 and with FWHM of 5 units. The constant n_0 is chosen to reflect different observing times. The line has an expected height of An_0 counts and sits on a constant background of Bn_0 counts. (From Sivia: *Data Analysis, a Bayesian Tutorial*, OUP, 1996.)

n_0 chosen to expect 100 counts at x=0, and a range of 15 bins.

n_0 chosen to expect 10 counts at x=0.

n_0 chosen to expect 100 counts at x=0, but with twice the range in x (30 bins).

n_0 chosen to expect 100 counts at x=0, but with half the range in x (7 bins).



The data.

Joint posterior distribution for A and B.

Marginal distribution for A. The dotted line shows the pdf for A given B.

Marginal distribution for B.