Now let as mix these two independent components. Let us take the following mixing matrix:

$$\mathbf{A}_0 = \begin{pmatrix} 2 & 3 \\ 2 & 1 \end{pmatrix} \tag{8}$$

This gives us two mixed variables, x_1 and x_2. It is easily computed that the mixed data has a uniform distribution on a parallelogram, as shown in Figure 6. Note that the random variables x_1 and x_2 are not independent any more; an easy way to see this is to consider, whether it is possible to predict the value of one of them, say x_2, from the value of the other. Clearly if x_1 attains one of its maximum or minimum values, then this completely determines the value of x_2. They are therefore not independent. (For variables s_1 and s_2 the situation is different: from Fig. 5 it can be seen that knowing the value of s_1 does not in any way help in guessing the value of s_2.)

The problem of estimating the data model of ICA is now to estimate the mixing matrix $\mathbf{A}_0$ using only information contained in the mixtures x_1 and x_2. Actually, you can see from Figure 6 an intuitive way of estimating $\mathbf{A}$: The edges of the parallelogram are in the directions of the columns of $\mathbf{A}$. This means that we could, in principle, estimate the ICA model by first estimating the joint density of x_1 and x_2, and then locating the edges. So, the problem seems to have a solution.