BINNING THE DATA

If N is large, one first "bins" the data otherwise the computational work to compute jackknife averages is too large.
It scales like N^2

$$\text{Definitions} = \begin{cases} N & \text{number of data} \\ n & \text{number of bins} \\ N/n = m & \text{bin length} \end{cases}$$

n should be chosen so that N/n is an integer.

Example $\quad N = 9 \quad n = 3 \quad m = 3$

$$\left.\begin{matrix} f(x_1) \\ f(x_2) \\ f(x_3) \end{matrix}\right\} \text{bin } 1 \qquad F_1 = \frac{1}{m}\left(f(x_1) + f(x_2) + f(x_3)\right)$$

$$\left(\frac{1}{3}\right)$$

$$\left.\begin{matrix} f(x_4) \\ f(x_5) \\ f(x_6) \end{matrix}\right\} \text{bin } 2 \qquad F_2 = \frac{1}{m}\left(f(x_4) + f(x_5) + f(x_6)\right)$$

$$\left.\begin{matrix} f(x_7) \\ f(x_8) \\ f(x_9) \end{matrix}\right\} \text{bin } 3 \qquad F_3 = \frac{1}{m}\left(f(x_7) + f(x_8) + f(x_9)\right)$$

In general we define

$$F_j = \frac{1}{m} \sum_{k=m(j-1)+1}^{mj} f(X_k)$$

$$\left.\begin{matrix} f(X_1) \\ \vdots \\ f(X_m) \end{matrix}\right\} \rightarrow F_1 \qquad \left.\begin{matrix} f(X_{m+1}) \\ \vdots \\ f(X_{2m}) \end{matrix}\right\} \rightarrow F_2 \qquad \text{and so on}$$

The JK method is applied to F_j.

We define

$$\overline{F}_i = \frac{1}{n-1} \sum_{\substack{j=1 \\ j \neq i}}^{n} F_j \qquad J_i = J(\overline{F}_i)$$

and use the JK formula with

$$n \text{ (number of bins)} \longleftrightarrow N \text{ (number of iterations)}$$

It is a good idea to take $n \approx 100$