varying the interpolation degree used. The W interpolation is performed using either a linear or quadratic interpolation and the Q^2 interpolation is performed using either a first, second or third degree interpolation. The standard deviation of these six possible methods is taken as the uncertainty. The variation arising from the different orders of Q^2 interpolation can be substantial, so in order to reduce this systematic we use the following technique, which is illustrated in fig. 9.11:

1. An exponential fit is subtracted from the data as a function of Q^2.
2. The interpolation is performed on the residual which has a much smaller Q^2 variation.
3. The exponential background is added back to the interpolated point in order to avoid any bias that may occur due to the choice of an exponential to describe the Q^2 behaviour.

In the regions where extrapolation is required, we compare our results to the MAID [40] model and take the full difference as an additional uncertainty.

9.4 Polarized Structure Functions

We now present the spin structure functions briefly mentioned in the previous section. g_1 and g_2 are formed from the polarized cross section differences according to the following relations:

$$g_1 = \frac{MQ^2}{4\alpha^2}\frac{y}{(1-y)(2-y)}\left[\Delta\sigma_{\parallel} + \tan\frac{\theta}{2}\Delta\sigma_{\perp}\right] \tag{9.4}$$

$$g_2 = \frac{MQ^2}{4\alpha^2}\frac{y^2}{2(1-y)(2-y)}\left[-\Delta\sigma_{\parallel} + \frac{1+(1-y)\cos\theta}{(1-y)\sin\theta}\Delta\sigma_{\perp}\right] \tag{9.5}$$

In figure 9.12, the ^{3}He structure functions are plotted as measured at constant energy. The error bars represent total uncertainties, and the curves represent a spline fit to the data. Notice that the ^{3}He mass is used in Bjorken variable, so $x = 1$ corresponds to ^{3}He elastic scattering. Interpolating to constant momentum transfer results in the spectra displayed in figure 9.13, which we now discuss. Proceeding from right to left along the x axis the first noticeable feature corresponds to the quasielastic reaction. After the quasielastic there is a dramatic cross-over for both structure functions at an x corresponding to the quasifree pion production threshold. At lower x still is the $\Delta(1232)$ resonance where we find that g_1 is approximately equal and