Chi-squared two-curves test

The aim of this test is to compare two curves, $f(x)$ and $g(x)$, with the aim of deciding if they were extracted from the same population.
The test statistics χ^2 is the following:

$$\chi^2 = \sum_{i=1}^{n} \frac{(f(x_i) - g(x_i))^2}{\sigma^2(f(x_i)) + \sigma^2(g(x_i))}$$

where n is the number of observations, while the quantities $\sigma^2(f(x_i))$ and $\sigma^2(g(x_i))$ represent the uncertainties on the data points.

If the two distributions f and g are independent, the number of degrees of freedom is $\nu = n$.
The asymptotic distribution is:

$$P(\chi^2 > \chi^2_{obs}) = \frac{1}{2^{\frac{\nu}{2}}\Gamma(\frac{\nu}{2})} \int_{\chi^2_{obs}}^{\infty} x^{\frac{\nu}{2}-1} e^{-\frac{x}{2}} \ \mathrm{dx}$$

This test needs a modification to the original design of the Goodness-of-Fit Toolkit and must be considered for the moment as work in progress.