

# Measured $g_2^{WW}$

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04/04/2013

# Outline

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$g_2^{WW}$

- Definition
- ${}^3\text{He}$
- DIS Neutron

2

To-Do

Computing  $g_2^{WW}$ 

$$\begin{aligned} g_2^{WW} &= -g_1(x) + \int_x^1 \frac{dy}{y} g_1(y) \\ &= -g_1(x) + \sum_{i=x}^1 \frac{g_1(i)}{i} \Delta x \end{aligned}$$

$$\delta g_2^{(^3He(n), WW)} = \left( \frac{\delta g_1^{(^3He(n))}}{g_1^{(^3He(n))}} \right) g_2^{(^3He(n), WW)}$$

- where  $x$  had mean central values of 0.225 to 0.975
- $i$  ran over  $x$  central values
- $\Delta x$  is  $x$  bin-width of 0.05

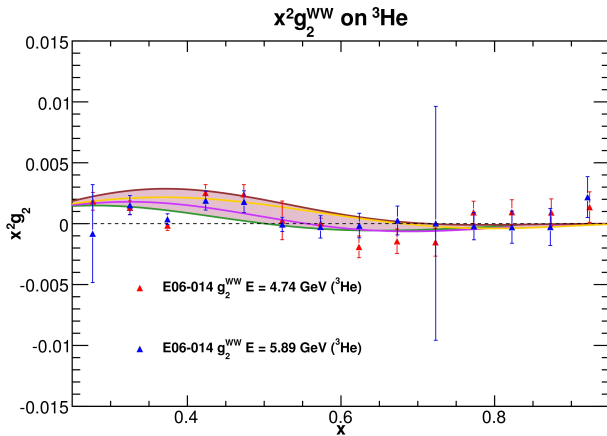
$g_2^{WW}$  on  ${}^3\text{He}$ 

Figure: E06-014 measured preliminary  $g_2^{WW}$  on  ${}^3\text{He}$  at beam energies of 4.74 and 5.89 GeV. Shaded band is  $g_2^{{}^3\text{He}, WW}$  coverage from DSSV (green), BB (magenta), GS (brown) and DNS2005 (yellow) models.

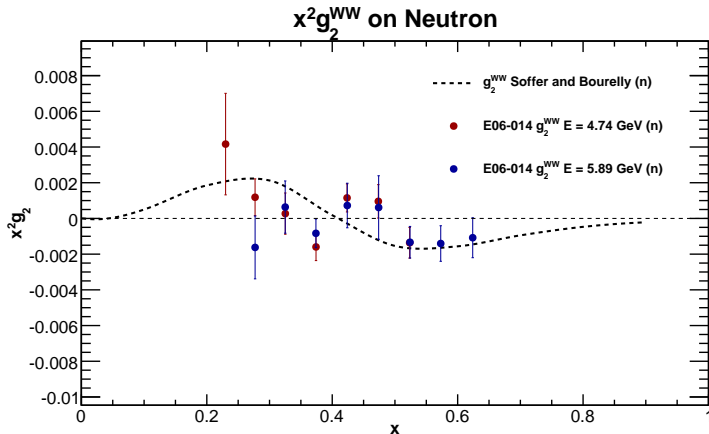
DIS  $g_2^{WW}$  on the Neutron

Figure: E06-014 measured preliminary  $g_2^{WW}$  on the neutron at beam energies of 4.74 and 5.89 GeV. Dashed line is  $g_2^{n, WW}$  calculated by Soffer and Bourelly.

# Summary

- Measured  $g_2^{WW}$  data agrees with world  $g_2^{WW}$  data
- Need to handle the uncertainties better
  - Vary  $g_1$  by  $g_1$  uncertainty and use change in  $g_2^{WW}$  as uncertainty

# To-Do

- Continue systematics
  - Continue working on Cut systematics study
  - Compute kinematic uncertainties (almost finished)
  - Apply DSSV uncertainty to  $g_2^{3He, WW}$  calculation ( $\bar{g}_2$ )
  - Apply uncertainty from world  $g_1$  and  $g_2$  fits to low  $x$   $d_2$  calculation (< 1% uncertainty)
- Work on pion contamination