$N \rightarrow \Delta$, N^* DVCS: experiment
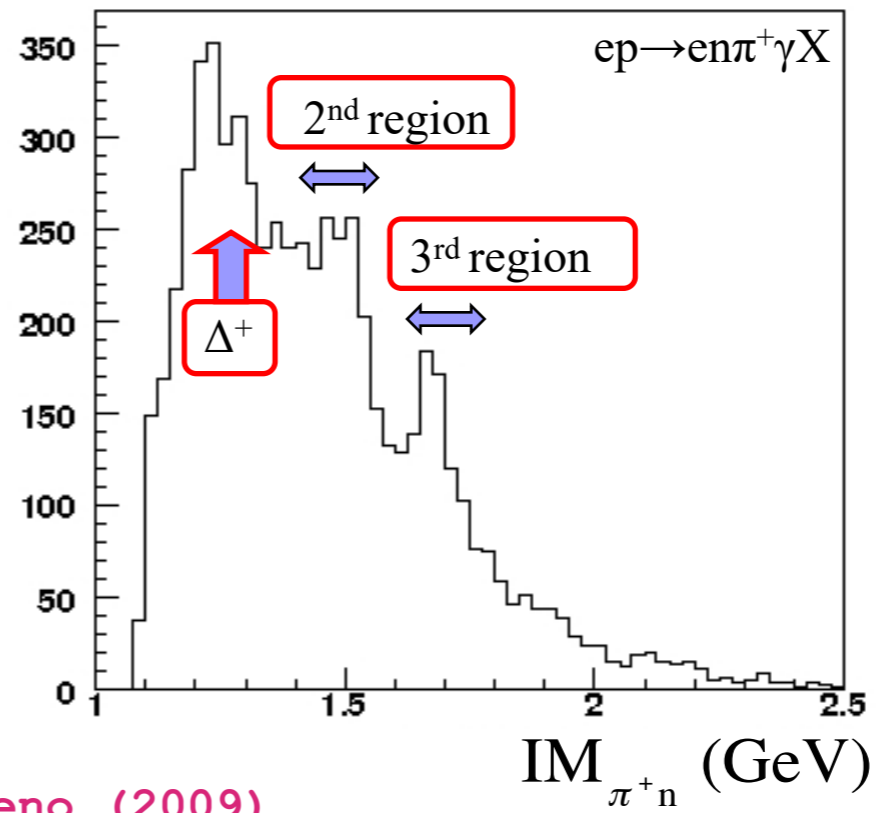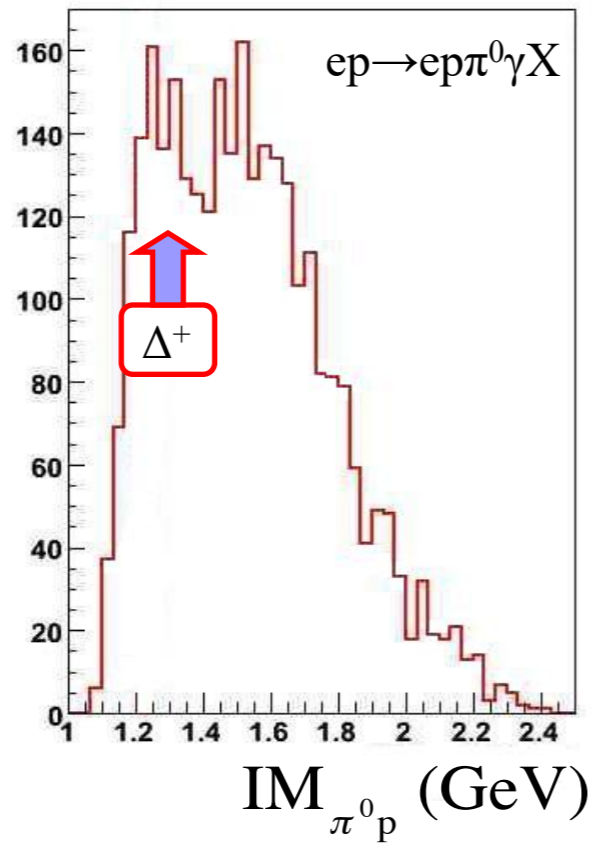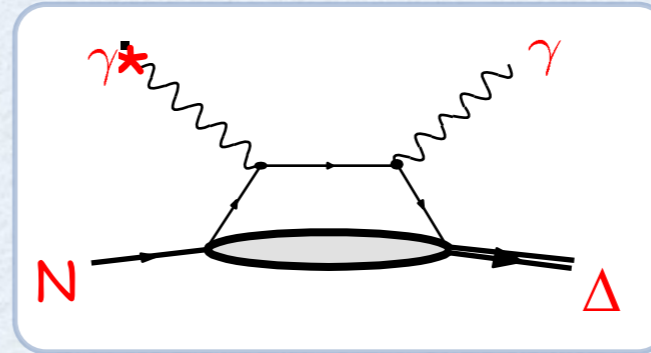
events seen in CLAS6

W > 2 GeV

$Q^2 \approx 2.5$ GeV²

Moreno (2009)

unique opportunity for CLAS12

N $\rightarrow$ Δ(1232) DVCS and GPDs

$Q^2 \gg$ γ^* $\quad$ t $\quad$ γ

low -t process: $-t \ll Q^2$

x + ξ $\qquad$ x - ξ

GPDs

N $\qquad$ Δ(1232)

8 twist-2 **GPDs(x, ξ, t):** 4 unpolarized, 4 polarized

$\Longrightarrow$ unpolarized GPDs: H_M, H_E, H_C, H_4 $\qquad$ **Frankfurt,Polyakov, Strikman, Vdh(2000)**

$$\int_{-1}^{+1} H_M(x, \xi, t) = 2G_M^*(t)$$

$$\int_{-1}^{+1} H_E(x, \xi, t) = 2G_E^*(t)$$

Jones-Scadron e.m. FFs for N -> Δ

$$\int_{-1}^{+1} H_C(x, \xi, t) = 2G_C^*(t)$$

$$\int_{-1}^{+1} H_4(x, \xi, t) = 0$$

Similar relations for polarized GPDs

2

N → Δ(1232) magnetic dipole GPD
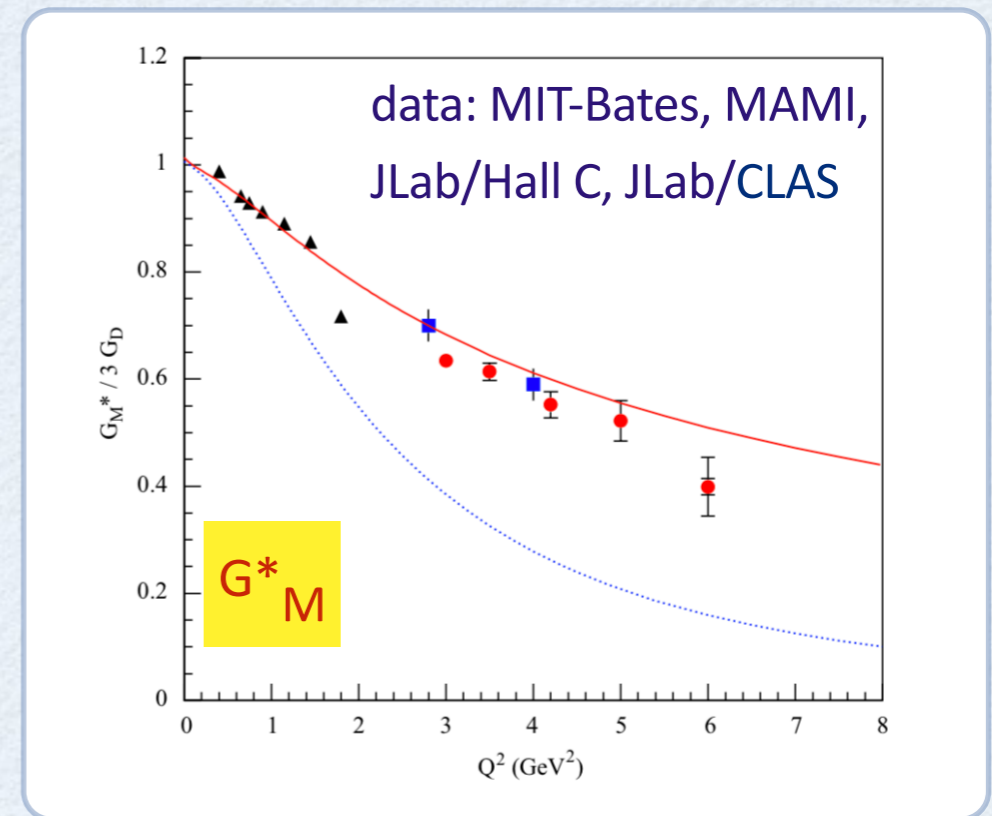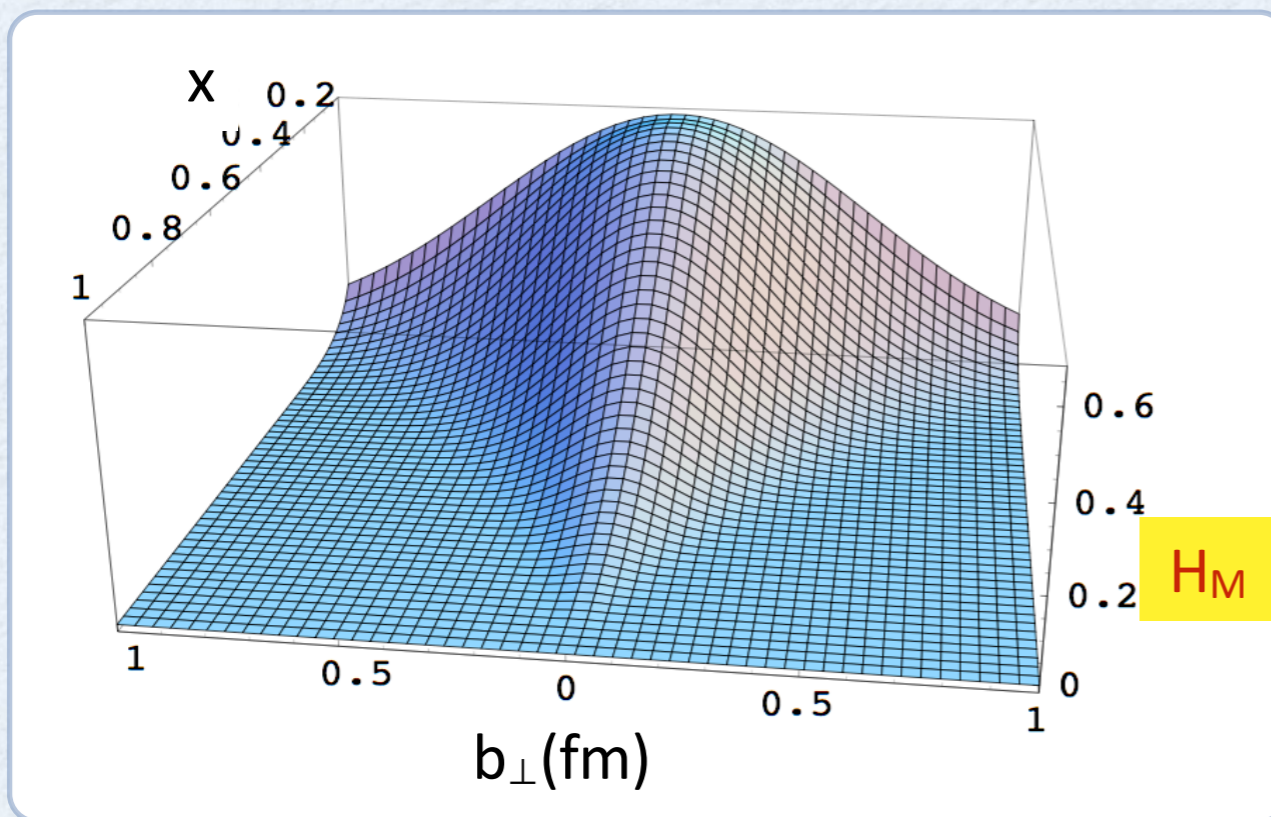
large N_c :

$$H_M(x,\xi,t) = 2\frac{G_M^*(0)}{\kappa_V}\left\{E^u(x,\xi,t) - E^d(x,\xi,t)\right\}$$

Frankfurt,Polyakov,
Strikman, Vdh(2000)

$$G_M^*(t) = \frac{G_M^*(0)}{\kappa_V}\int_{-1}^{+1}\left\{E^u(x,\xi,t) - E^d(x,\xi,t)\right\} = \frac{G_M^*(0)}{\kappa_V}\left\{F_2^p(t) - F_2^n(t)\right\}$$

large N_c : $G_M^*(0) = \kappa_V/\sqrt{2} \simeq 2.62$

exp : $G_M^*(0) \simeq 3.02$

large N_c + nucleon Regge GPD model

data: MIT-Bates, MAMI, JLab/Hall C, JLab/CLAS

Guidal, Polyakov, Radyushkin, Vdh(2005)