THE UNIVERSITY OF WARWICK

EvtGen validation at CDF

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General remarks

- Not much effort to centralized validation

- Last update to version alpha-00-14-05 included some work on validation

- But mostly rely on each user to validate that events he generates make sense from physics point of view

- Would definitely like to have some centralized physics validation

  - Specially as manpower which can be put into any such work is getting limited

- Had some idea of providing tools to CDF users who would feed back to global validation, but all is embedded in CDF software rather than being experiment independent

B mixing
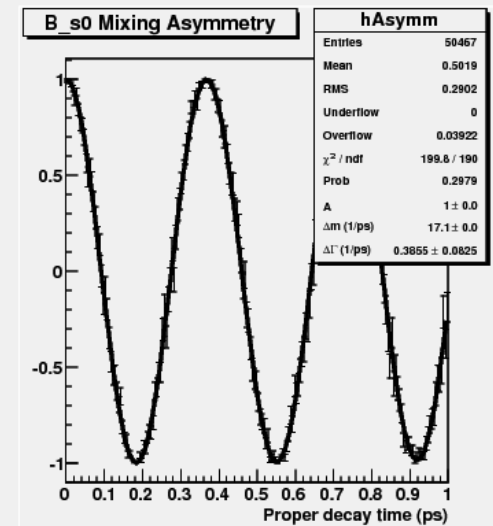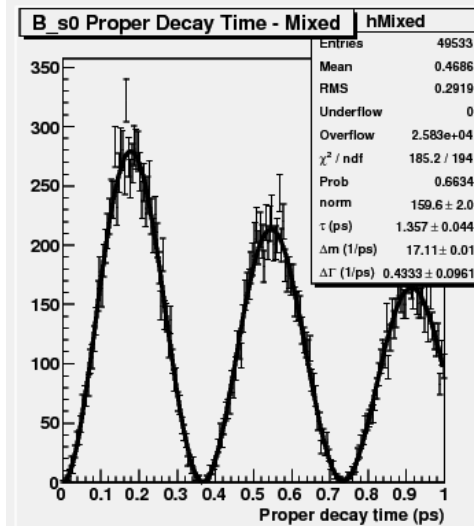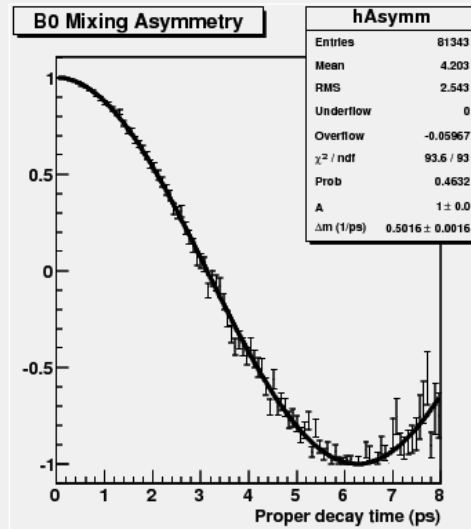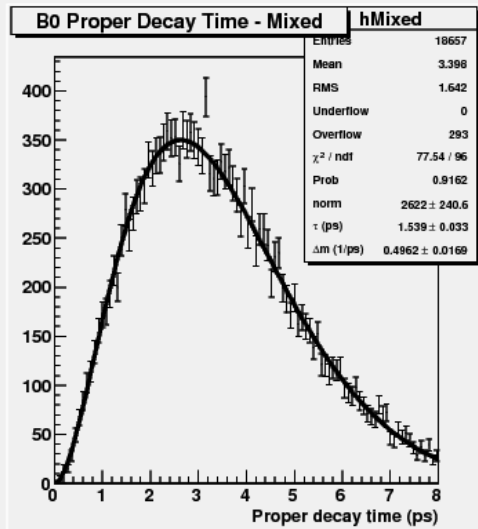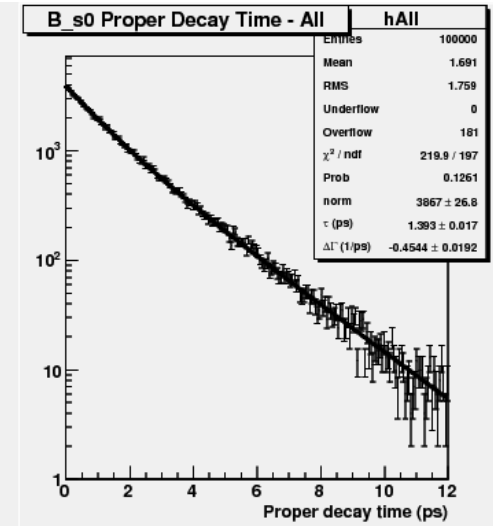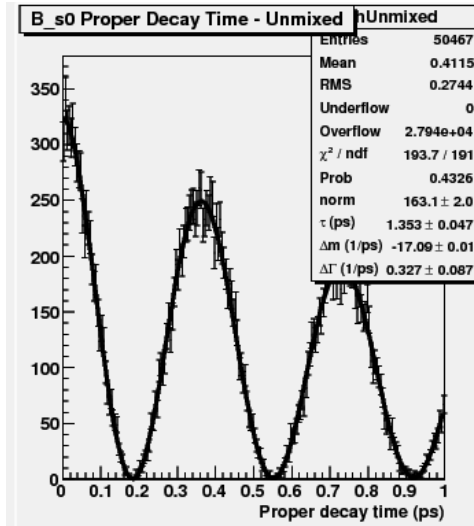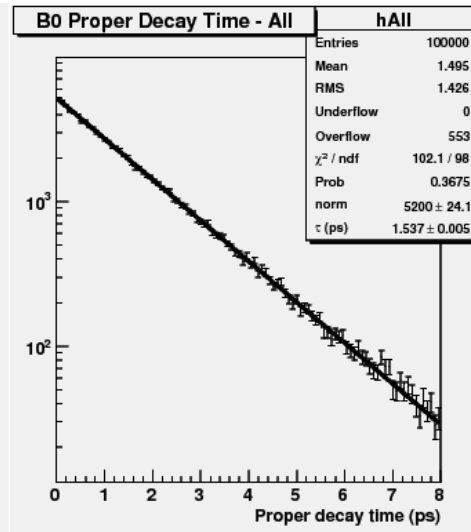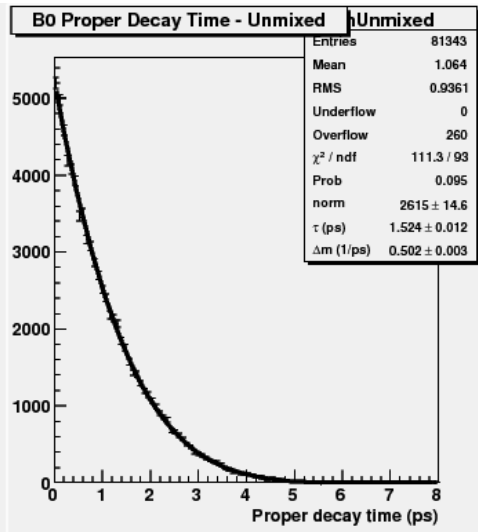
B daughters

| Branching ratio (%)	measured on CLEO	EvtGen	QQ
$B \to J/\psi$ X	$1.12 \pm 0.04 \pm 0.06$	1.05	1.16
$B \to \psi'$ X	$0.34 \pm 0.04 \pm 0.03$	0.21	0.36
$B \to \chi_{c1}$ X	$0.40 \pm 0.06 \pm 0.04$	0.25	0.40
$B \to D_s^+$ X	$11.12\pm0.39\pm0.88\pm1.38$(i)	13.9	10.2
$B \to D^{*0}$ X	$24.7 \pm 1.2\pm1.8\pm1.8$(ii)	26.5	27.1
$B \to D^{*+}$ X	$27.12\pm1.1\pm1.4\pm0.9$(iii)	26.6	27.1
$B \to D^0$ X	$63.6 \pm 1.4\pm1.9\pm1.8$(iv)	69.3	64.0
$B \to D^+$ X	$23.5\pm0.9\pm0.9\pm2.4$(v)	33.1	27.5
$B \to \Sigma_c^{++}$ X	$0.67 \pm 0.24 \pm0.21\pm0.15$(vi)	0.28	0
$B \to \Sigma_c^0$ X	$0.71 \pm 0.26 \pm 0.22 \pm 0.16$	0.56	0
$B \to e\nu$ X	$10.49 \pm 0.17 \pm 0.43$	10.45	10.86
$b \to c \to ye\nu$	$7.8 \pm 0.2 \pm 1.2$	11.6	10.2
$B \to \eta$ X	$17.6 \pm 1.1 \pm 1.2$	20.4	21.3
$B \to \phi$ X	$3.65 \pm 0.082 \pm 0.31$	5.01	3.42
$B \to K_s^0$ X	31.84	37.7	27.2
mean charge multiplicity	$10.71 \pm 0.02 \pm 0.21$	11.1	10.34
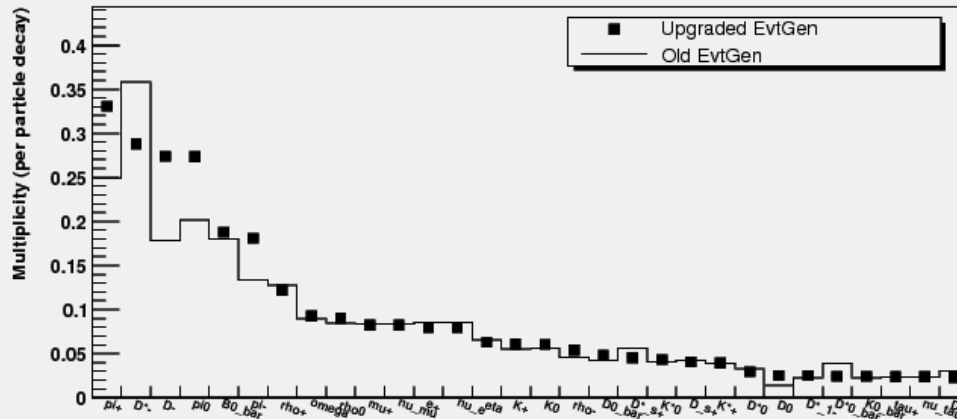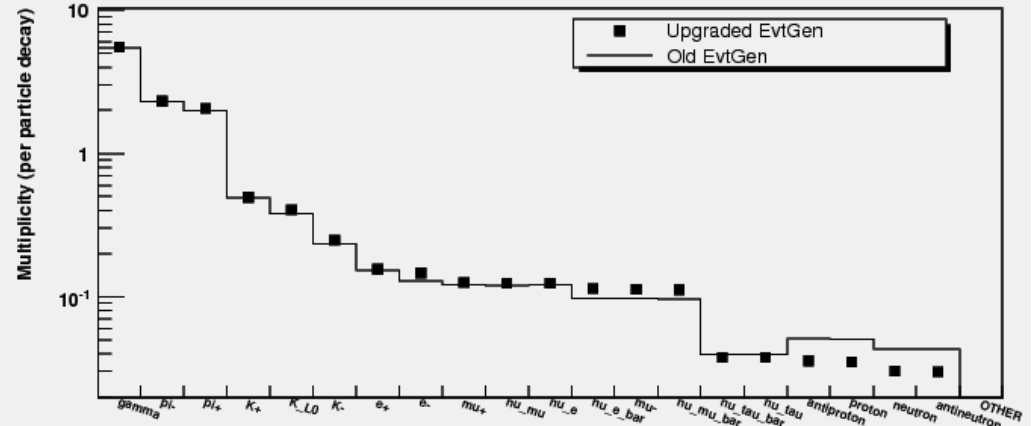
J/ψ momentum
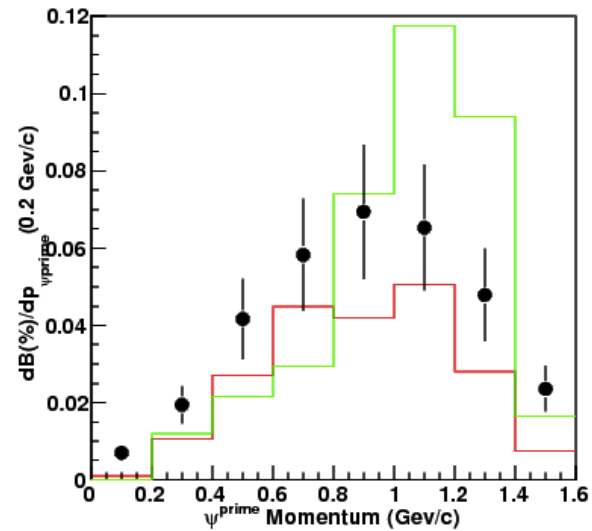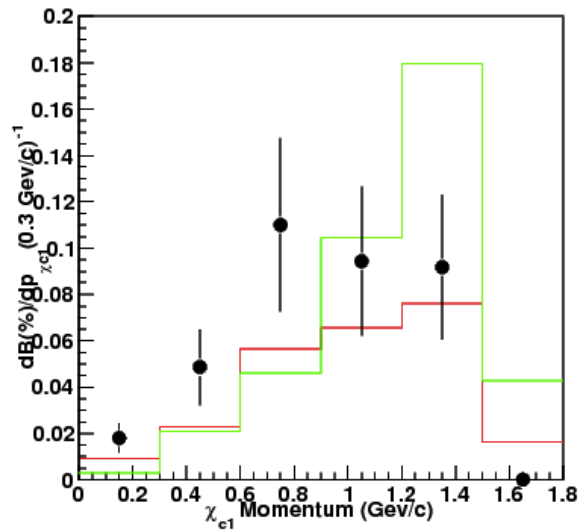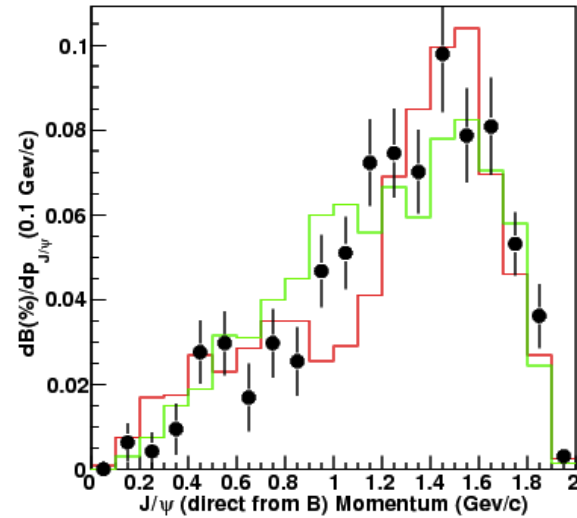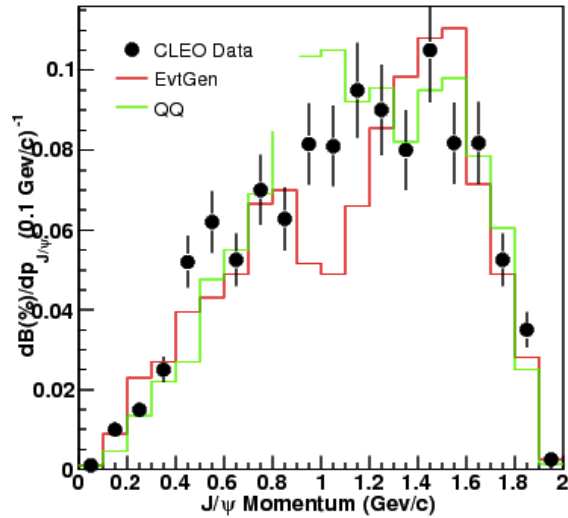
Charm meson momenta
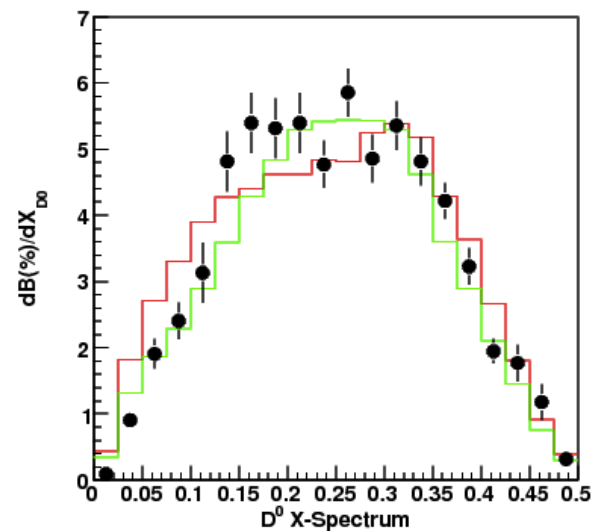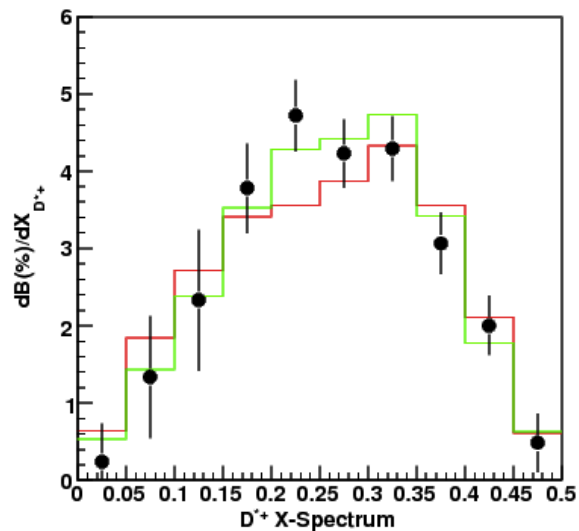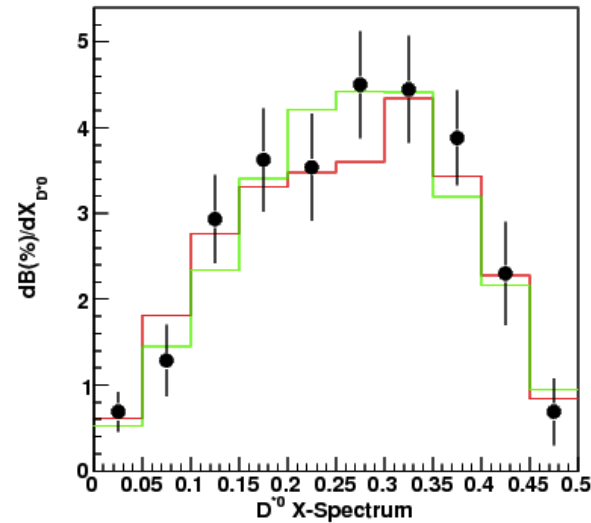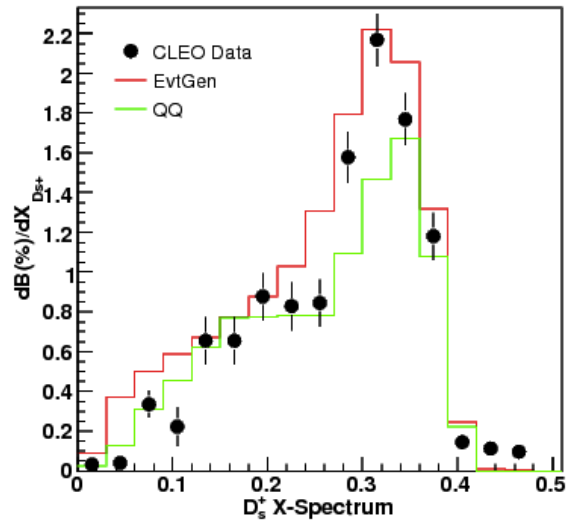
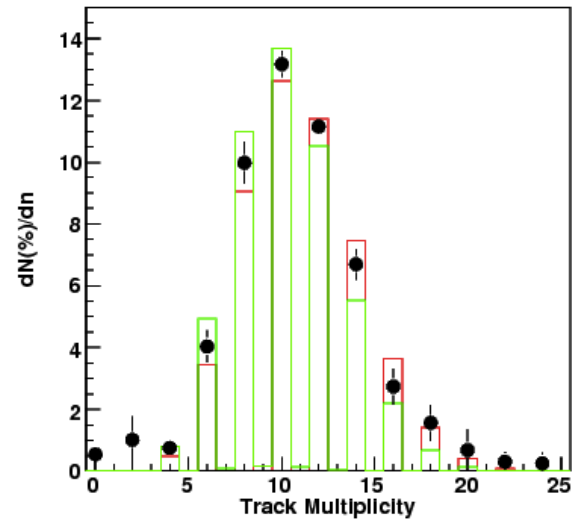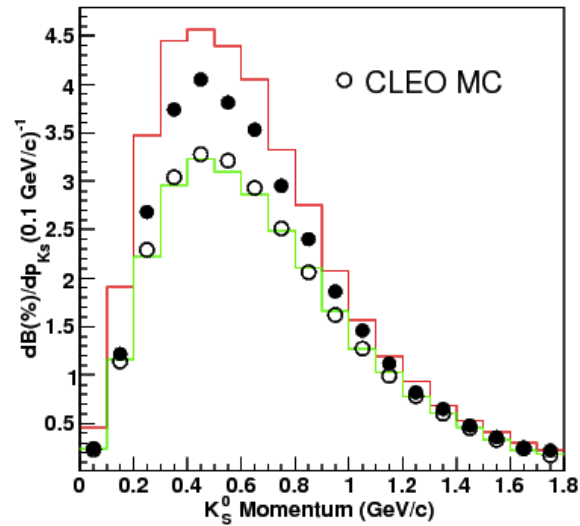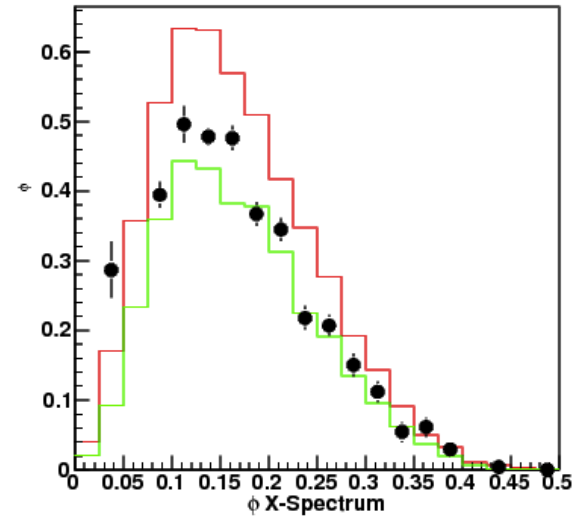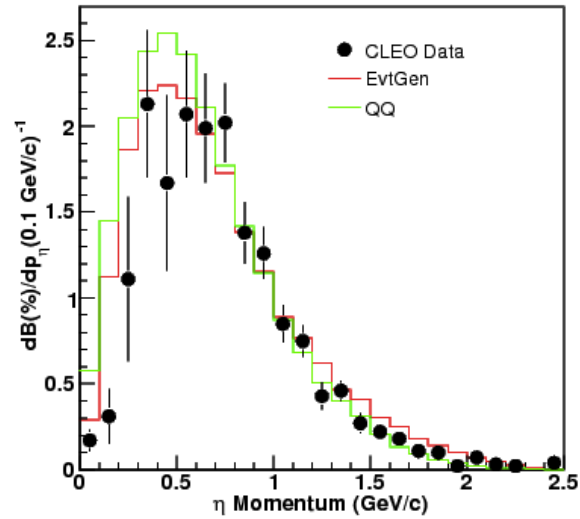# Other daughter plots

Summary

- What was done at CDF is just snapshot of my opinion how final validation should look like

- Clearly it is long term project requiring collection of all available results against which one can test

- We should be aware that not only branching fractions are important, but also other parameters which are more difficult to collect and handle

  - Amplitudes in decays to non-zero spin daughters

  - Dalitz plot models parameters

  - Form factors in semileptonic decays

  - And sure many other I'm just not aware right now

- Handling unknown affects things as well