

g2p/GEp analysis meeting

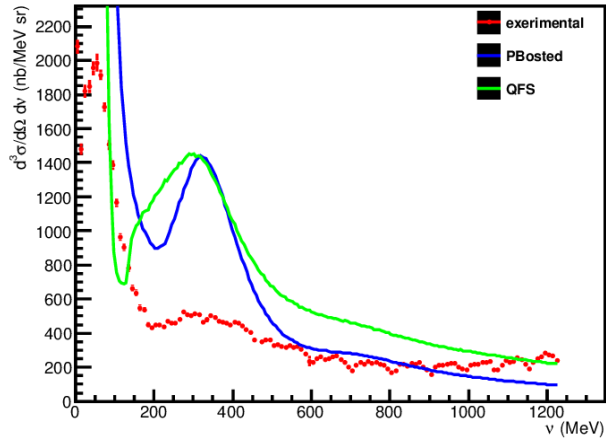
Oct 16 2013

Cross Sections and Packing Fraction

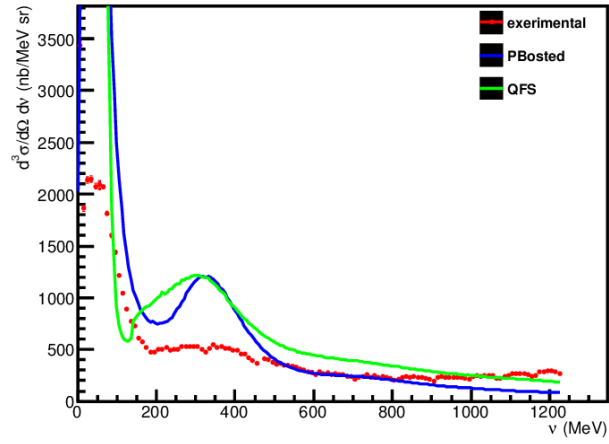
Moshe Friedman

# cross section models compared to Vince's unpublished data

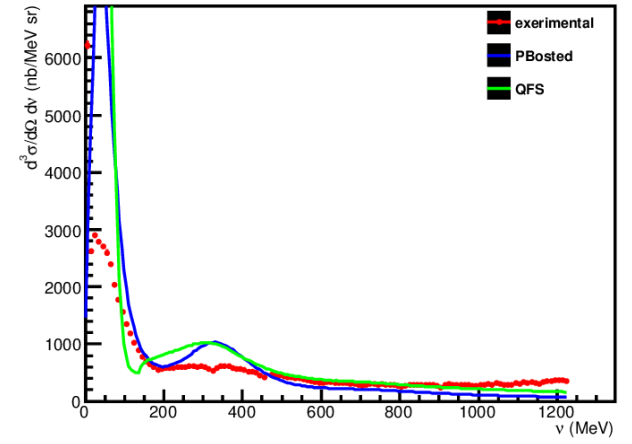
4.6 degrees



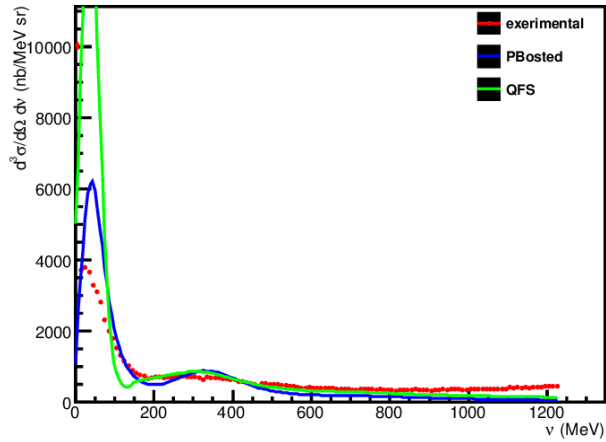
5.0 degrees



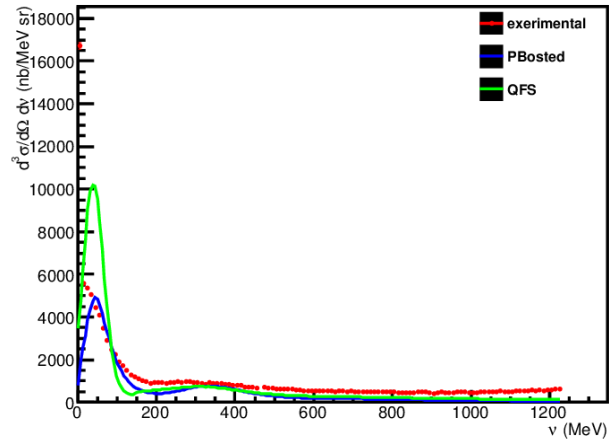
5.3 degrees



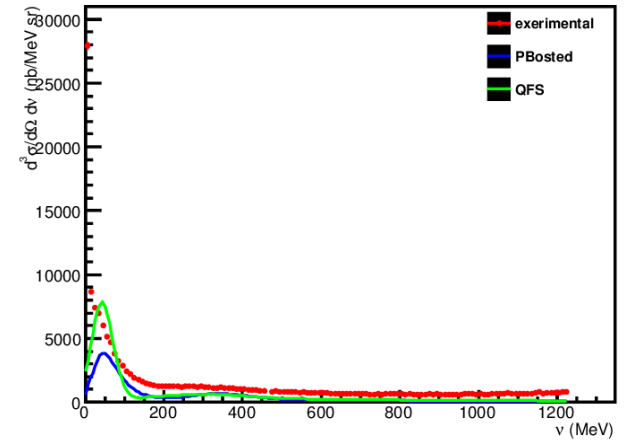
5.7 degrees



6.0 degrees



6.3 degrees

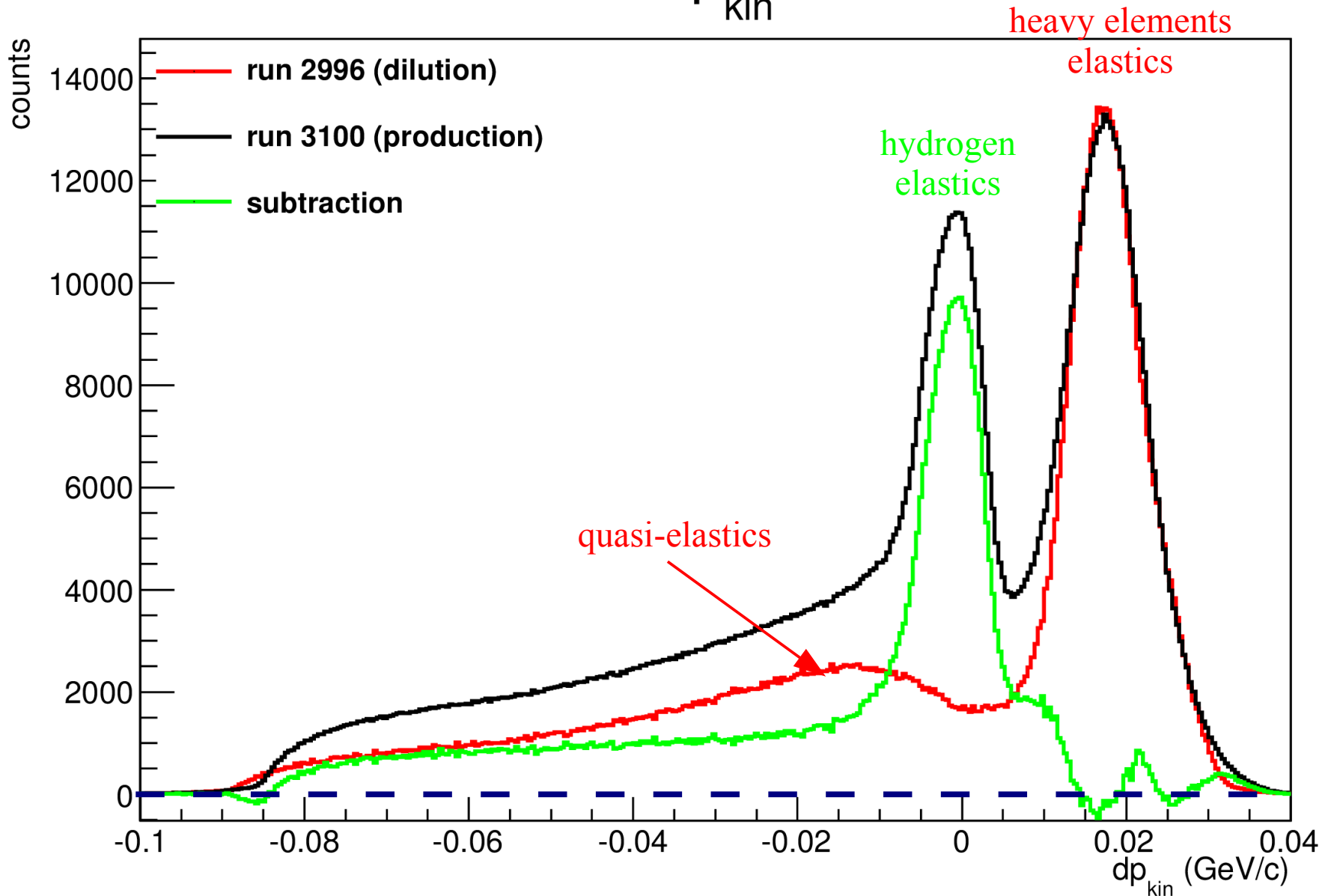


# preliminary packing fraction extraction

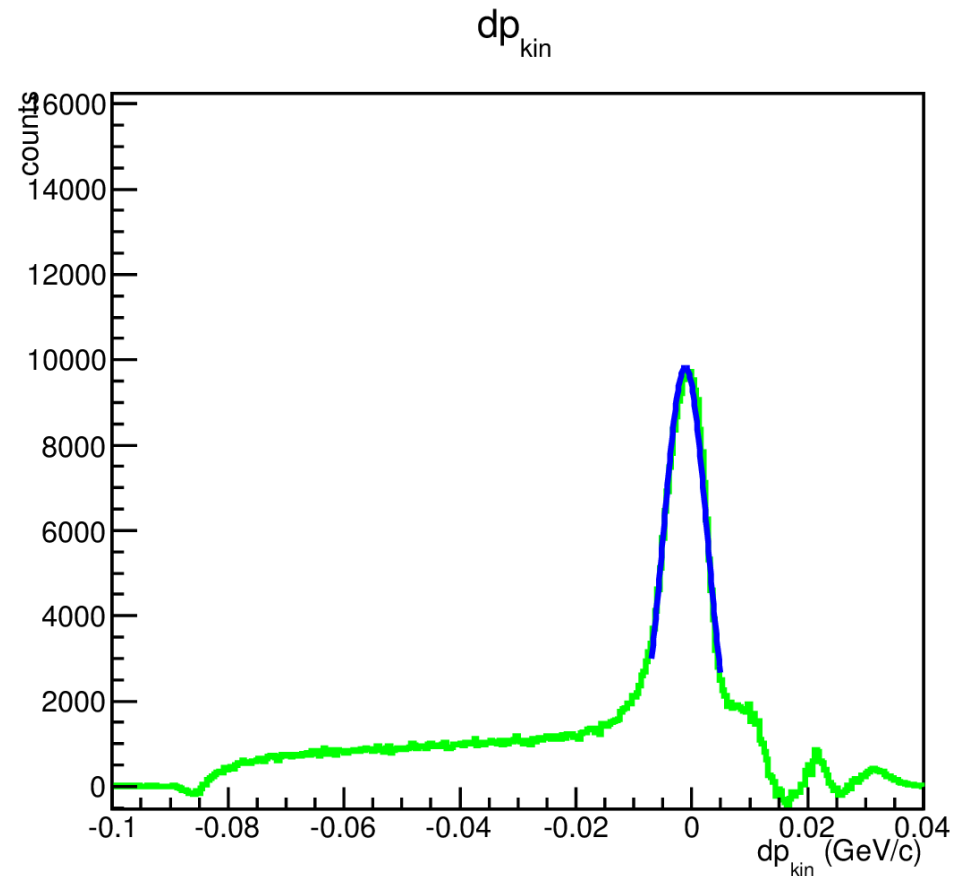
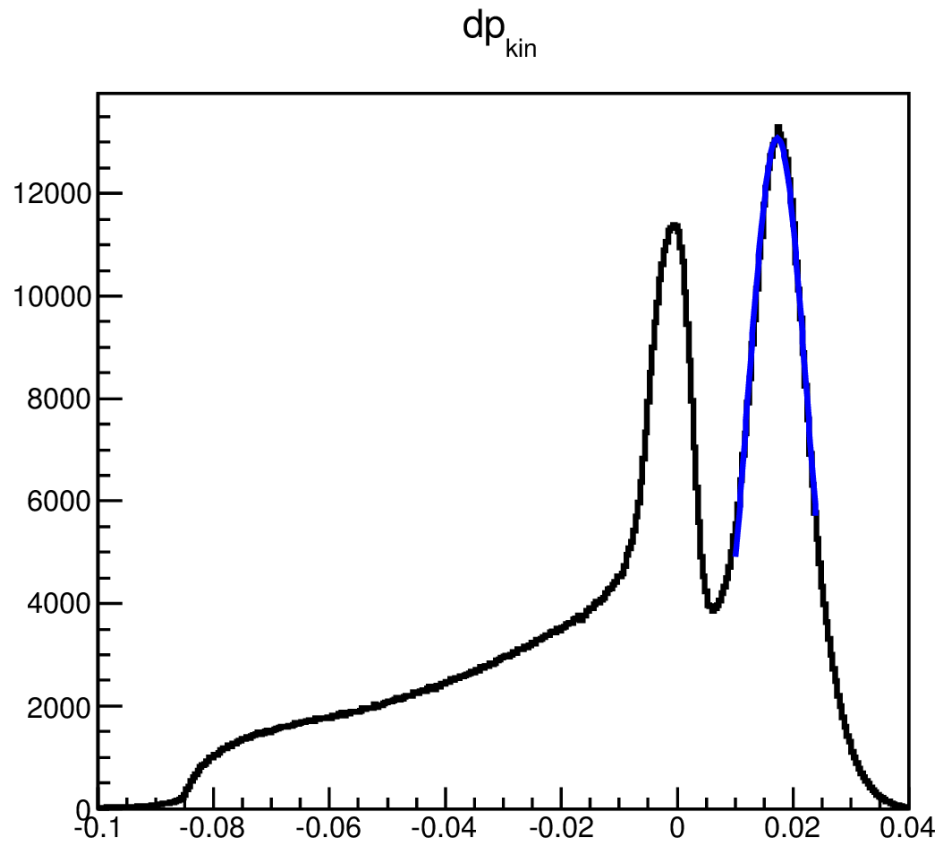
- Packing fraction extraction based on elastics peak area.
- In order to avoid quasi-elastic cross section models, using simplified background subtraction technique.
- Optics-depended (~March 2013).
- Does not take into account radiative tail.
- Will be used as an input for the GEp Event Generator, that should provide better estimation for the packing fraction by iterations.

# simplified background subtraction

$dp_{kin}$



# determination of peak area



- In order to avoid quasi-elastic contribution, only the peak is fitted to a Gaussian.
- The ratio between the yields is calculated by Gaussian parameters.

# packing fraction extraction

- Elements yields contribution is:

$$Y_H = \frac{3\rho_{NH_3} \cdot N_A \cdot d \cdot pf \cdot \sigma_H}{3M_{A,H} + M_{A,N}} \quad Y_N = \frac{\rho_{NH_3} \cdot N_A \cdot d \cdot pf \cdot \sigma_N}{3M_{A,H} + M_{A,N}} \quad Y_{He} = \frac{3\rho_{He} \cdot N_A \cdot d \cdot (1 - pf) \cdot \sigma_{He}}{M_{A,He}}$$

- The cross section is integrated over bin width.
- Using the experimental ratio between the heavy elements peak and hydrogen peak one can extract pf.
- Compare between right and left arm for consistency (different optics).
- Too early for uncertainty estimation.
- Preliminary results for the above data are:

	Peak ratio	pf
Left arm	0.55	0.46
Right arm	0.53	0.43