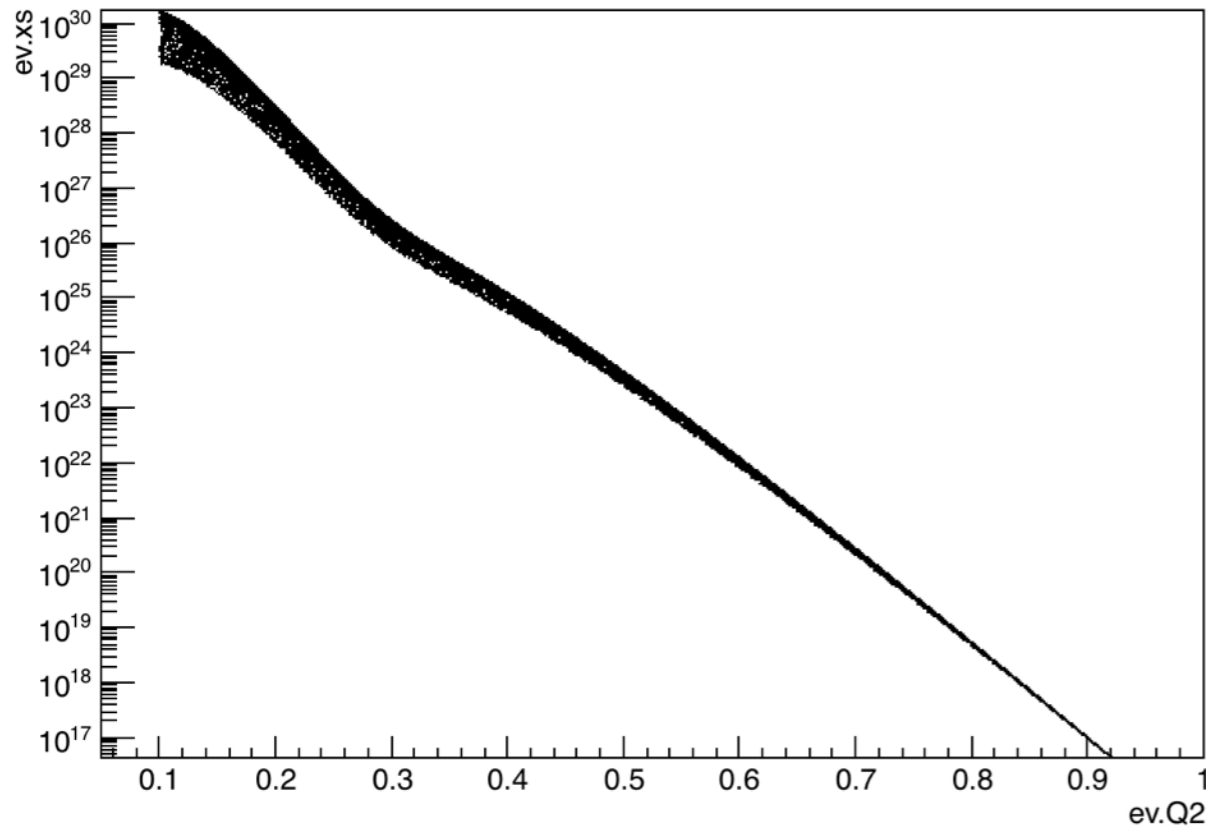


# AI Simulations

Ciprian Gal UVa

# Elastic generator

ev.xs:ev.Q2 {ev.Q2>0.1}



- the generator seems to behave reasonably

```
///~ Aymmetry calculation
const G4double gf=1.16637e-5;///fermi coupling [GeV^-2]
const G4double qwp=0.0713;
const G4double qwn=-0.988;

asym= -gf/(4.*pi*fine_structure_const*sqrt(2.)) * Q2/GeV/GeV * (qwp+qwn*(A-Z)/Z);
```

- the asymmetry calculation in Qweak had an extra factor of  $10^6$  which I guess is to get the result in ppm directly (removed for remoll)

# AI generators from Qweak

- elastic generator (basic copy paste with small constant modifications) (Gen 2)
  - need to add the Schwinger correction part (will commit by end of week)
- Bosted inelastic (cross checked with original Fortran code)
  - asymmetry is just  $Q^2[\text{GeV}^2]*0.8e-4$
- Bosted quasi elastic generator (cross checked with original Fortran code)
  - not sure what I should implement for the asymmetry (currently the same as the inelastic)
- Other generators in Qweak see Kurtis's talk at the Qweak collab meeting ([https://qweak.jlab.org/DocDB/0022/002232/001/kbartlett\\_Qweak\\_Collaboration\\_Meeting\\_August\\_2015\\_final.pdf](https://qweak.jlab.org/DocDB/0022/002232/001/kbartlett_Qweak_Collaboration_Meeting_August_2015_final.pdf))