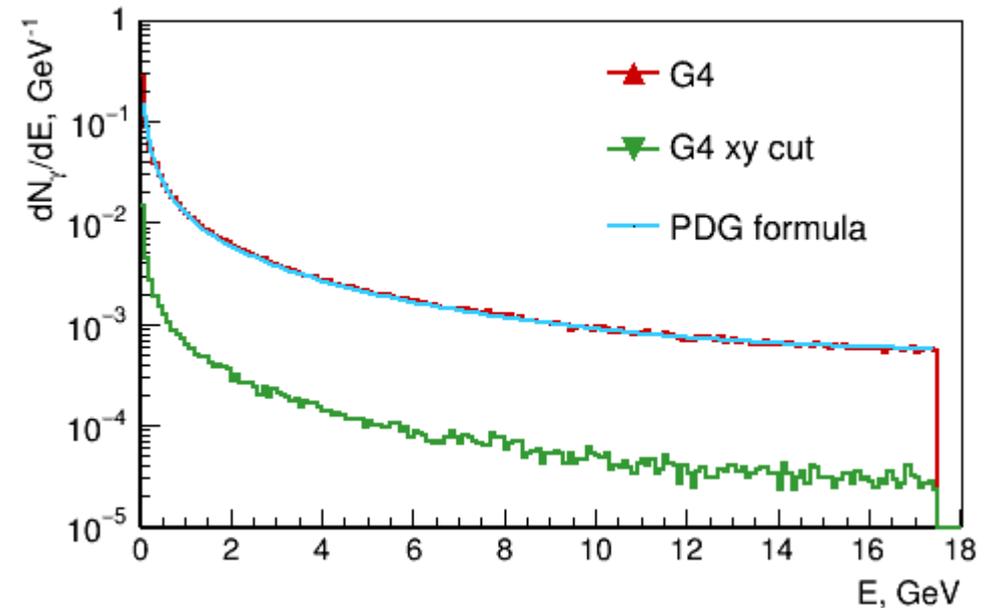


Bremsstrahlung production Gent4 vs PDG formula

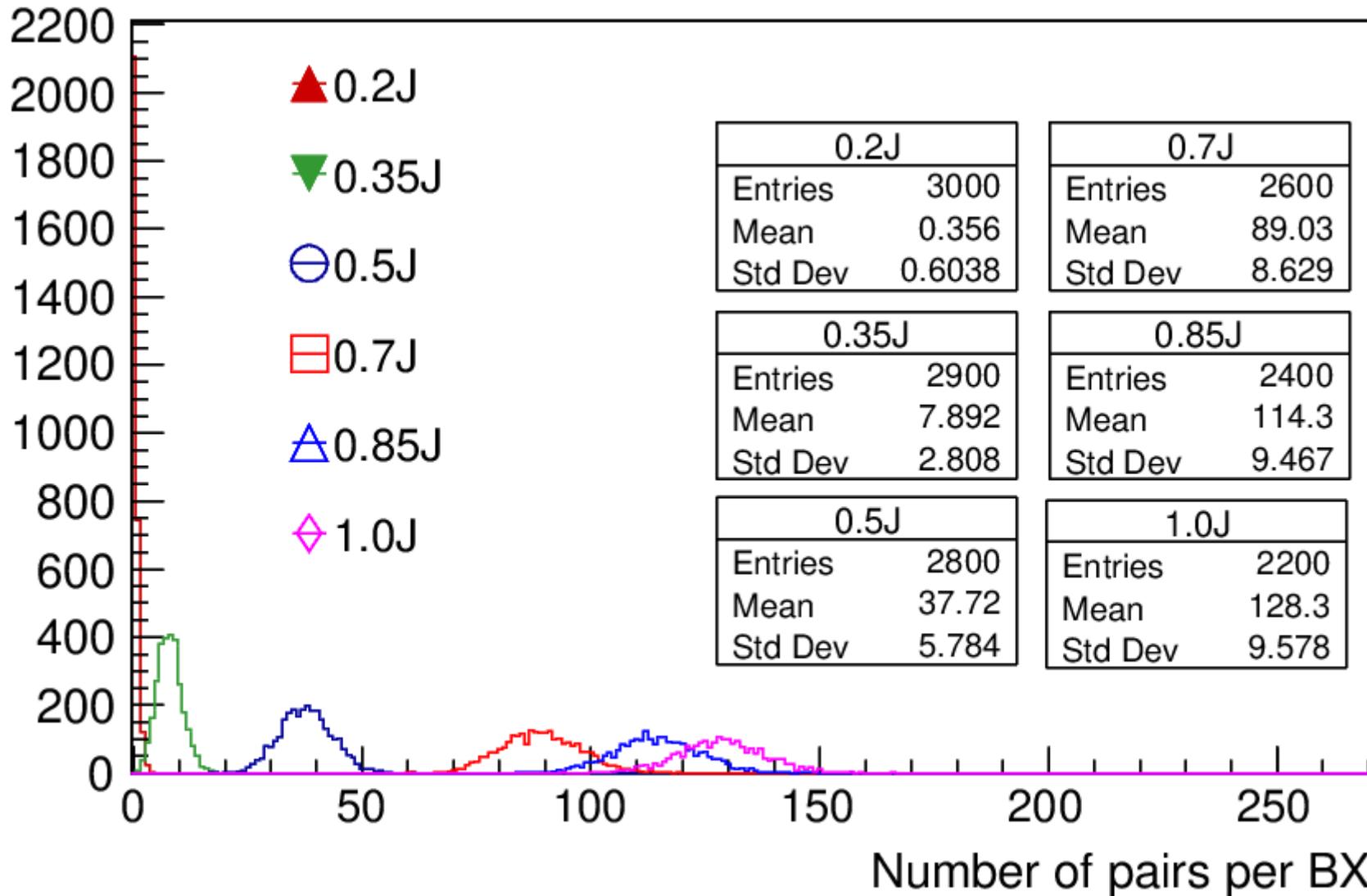
PDG formula for bremsstrahlung production:

$$\omega_i \frac{dN_\gamma}{d\omega_i} \approx \left[\frac{4}{3} - \frac{4}{3} \left(\frac{\omega_i}{E_e} \right) + \left(\frac{\omega_i}{E_e} \right)^2 \right] \frac{X}{X_0}$$



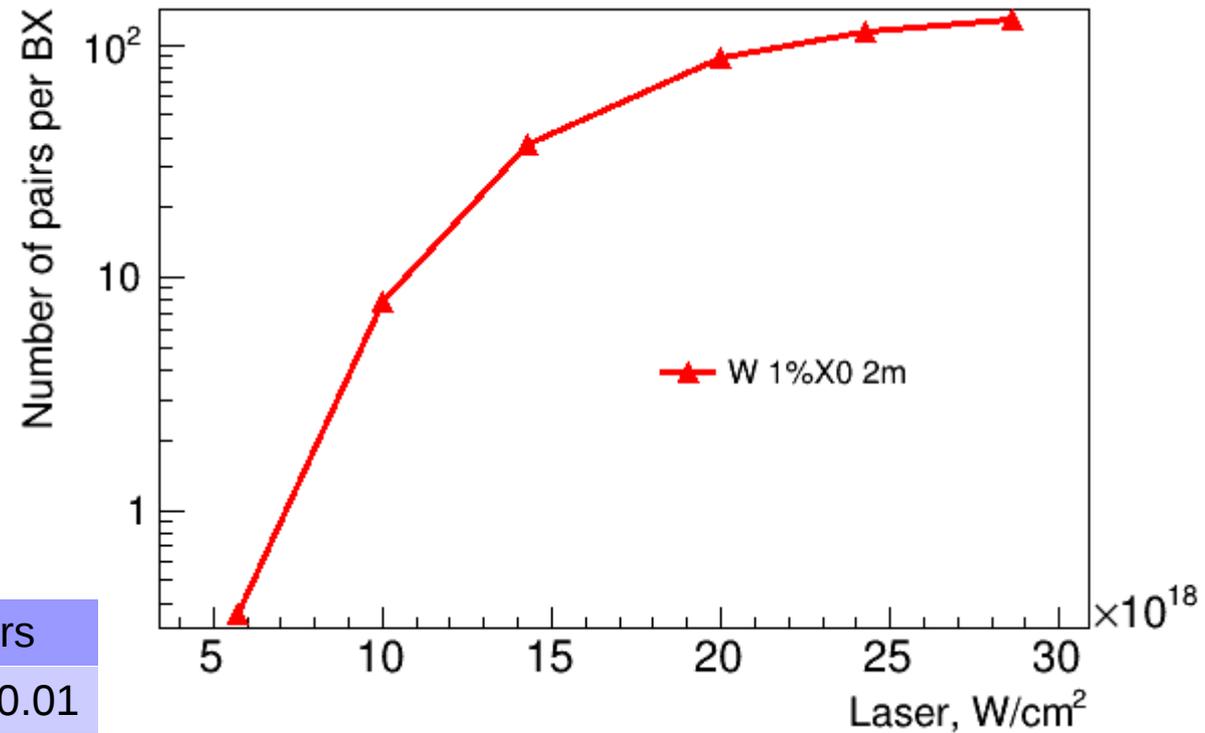
- Gaussian beam;
- Tungsten target 1%X0 (35um), 2m from IP;
- 10M electrons
- Two histograms are compared:
 - $|x| < 1\text{mm}$ and $|y| < 1\text{mm}$;
 - $|x| < 25\text{um}$ and $|y| < 25\text{um}$.

Number of pairs for different laser intensity



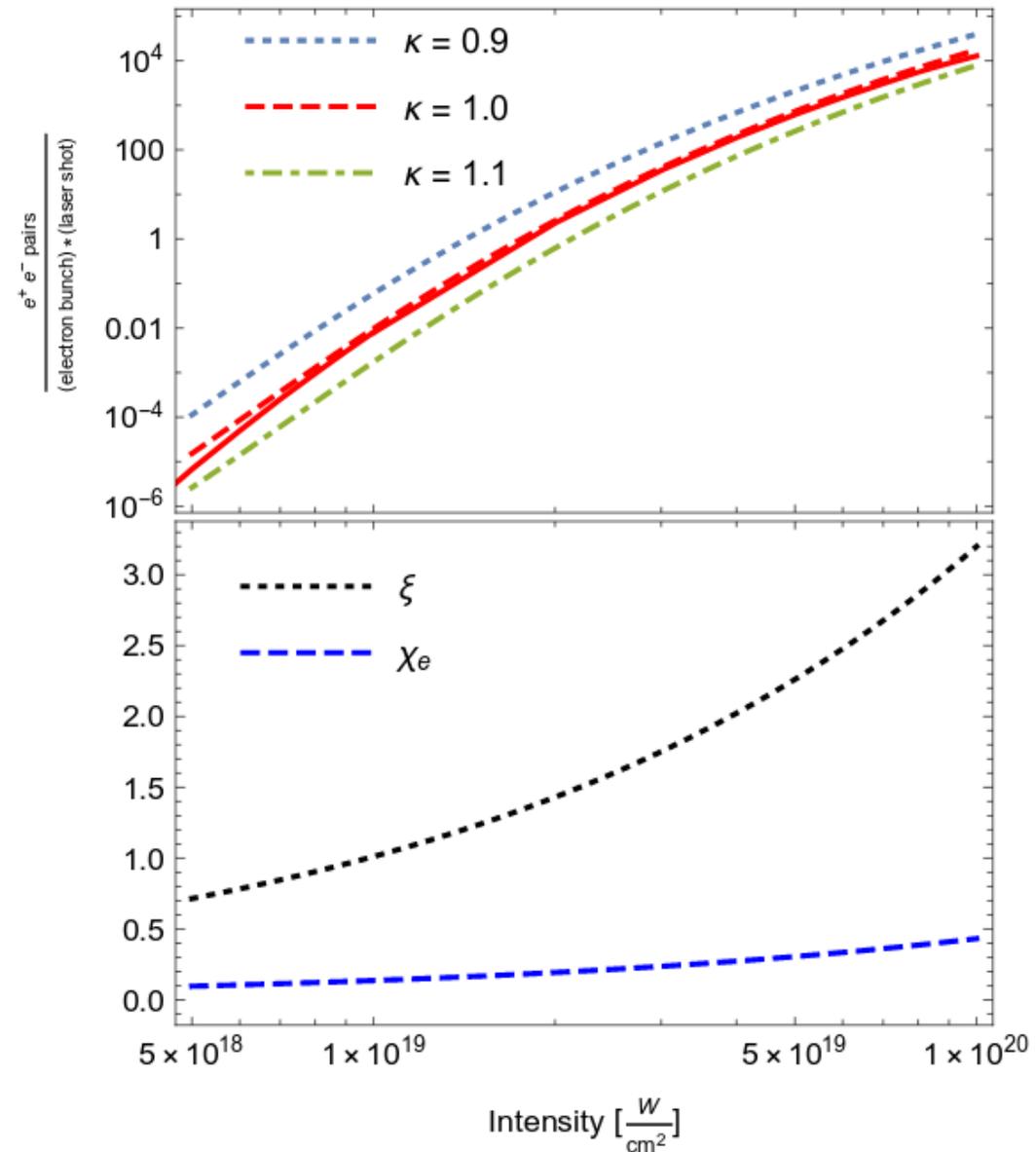
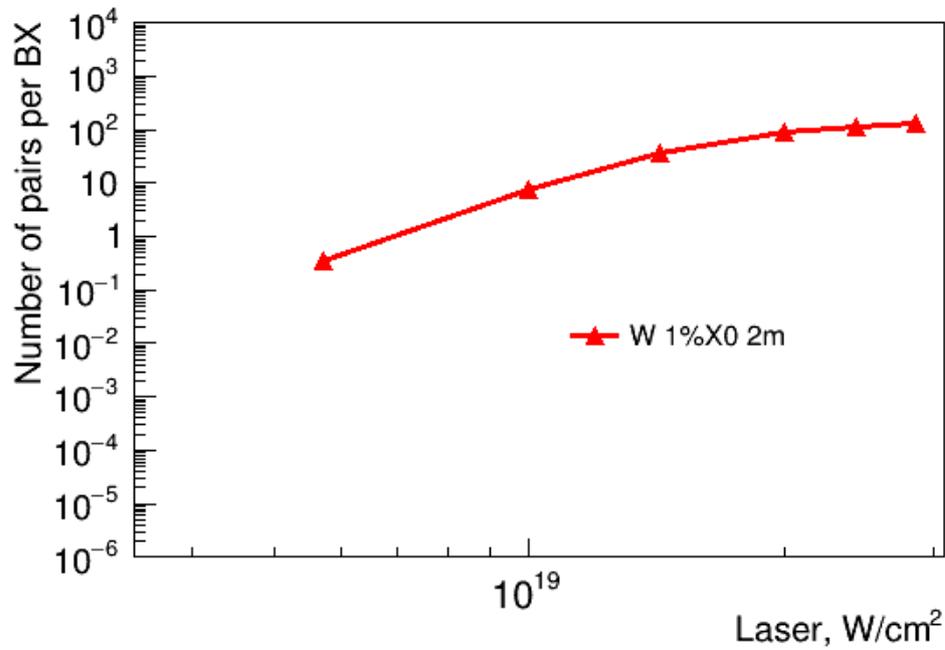
Number of pairs

- Gaussian beam;
- Tungsten target 1%X0 (35um), 2m from IP;



I, W/cm ²	N pairs per BX	Error N pairs
5.71E+018	0.36	0.01
1E+019	7.89	0.05
1.429E+019	37.72	0.11
2E+019	89.03	0.17
2.429E+019	114.31	0.19
2.857E+019	128.31	0.2

Comparison with the paper



Electron and laser beam parameters

E_pulse, μJ	Crossing angle, rad	Laser σ_{xy} , μm	Laser σ_z , ps	N Electrons	Electron σ_x , mm	Electron σ_y , mm	Electron σ_z , ps
3.5×10^6	0.3	10	0.035	6.25×10^9	0.005	0.005	0.08

- Laser wavelength = 800.00 nm (1.5498 eV);
- Circular polarized.