TO DO LIST ==> Analysis Strategy

- Reconstruct the " W" and Adopt the "W mass group" strategy for obtaining the W Transverse Momentum

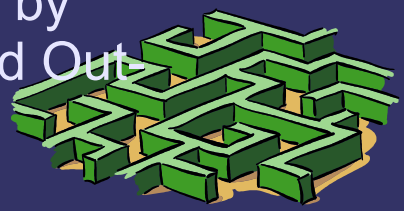
- Following the Lead in the Theory paper "Associated Production of Weak Bosons and Jets by Multiple Parton Interactions" by Halzen et.al-- If you see evidence of Double Parton Scattering in W+3 jets you can in W+2 jets too.

- The graph below depicts the difference in rate between Double Parton Signal in W+2 jets events and W + 3 jets events

- Another conclusion reached in the above theory paper would be the Jet Pt range at which Double Parton dominates over Higher-order QCD processes is 5Gev to 10 GeV

- Applying the above cut would entail having to understand this low energy jets, generic Jet Energy Corrections can only be applied for Jet Et >20 GeV.

- However study of the Underlying event in W events has been done by the W mass (CDF 7018) and "Underlying event ,Jet fragmentation and Out-of Cone Corrections in W->enu events" (CDF 7322)



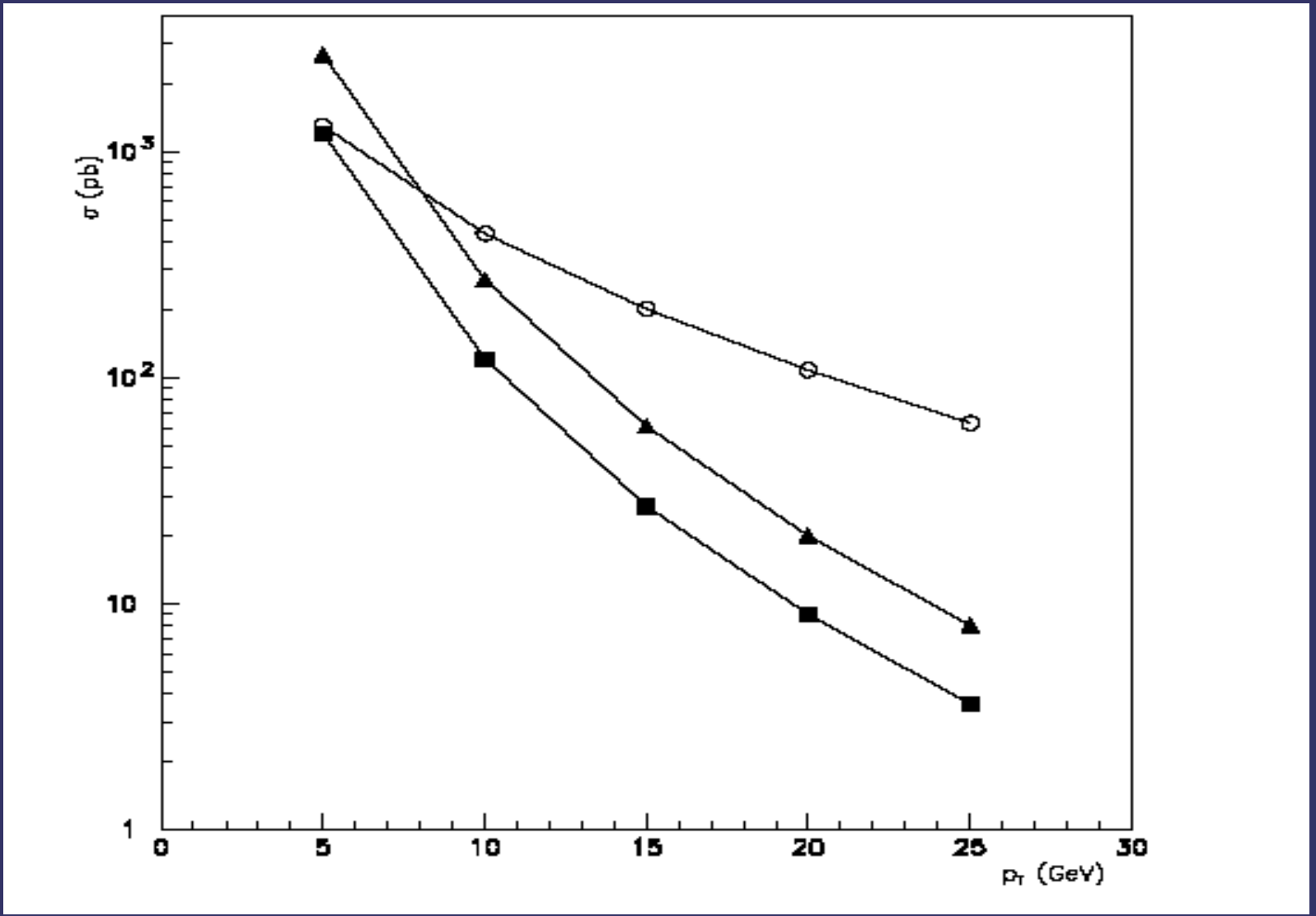


FIG. 2. Total cross section for the production of a W accompanied by 2 jets, as a function of the minimum-p_T cut, for: QCD processes (open circles), double-parton interactions (triangles), multiple interactions (squares).

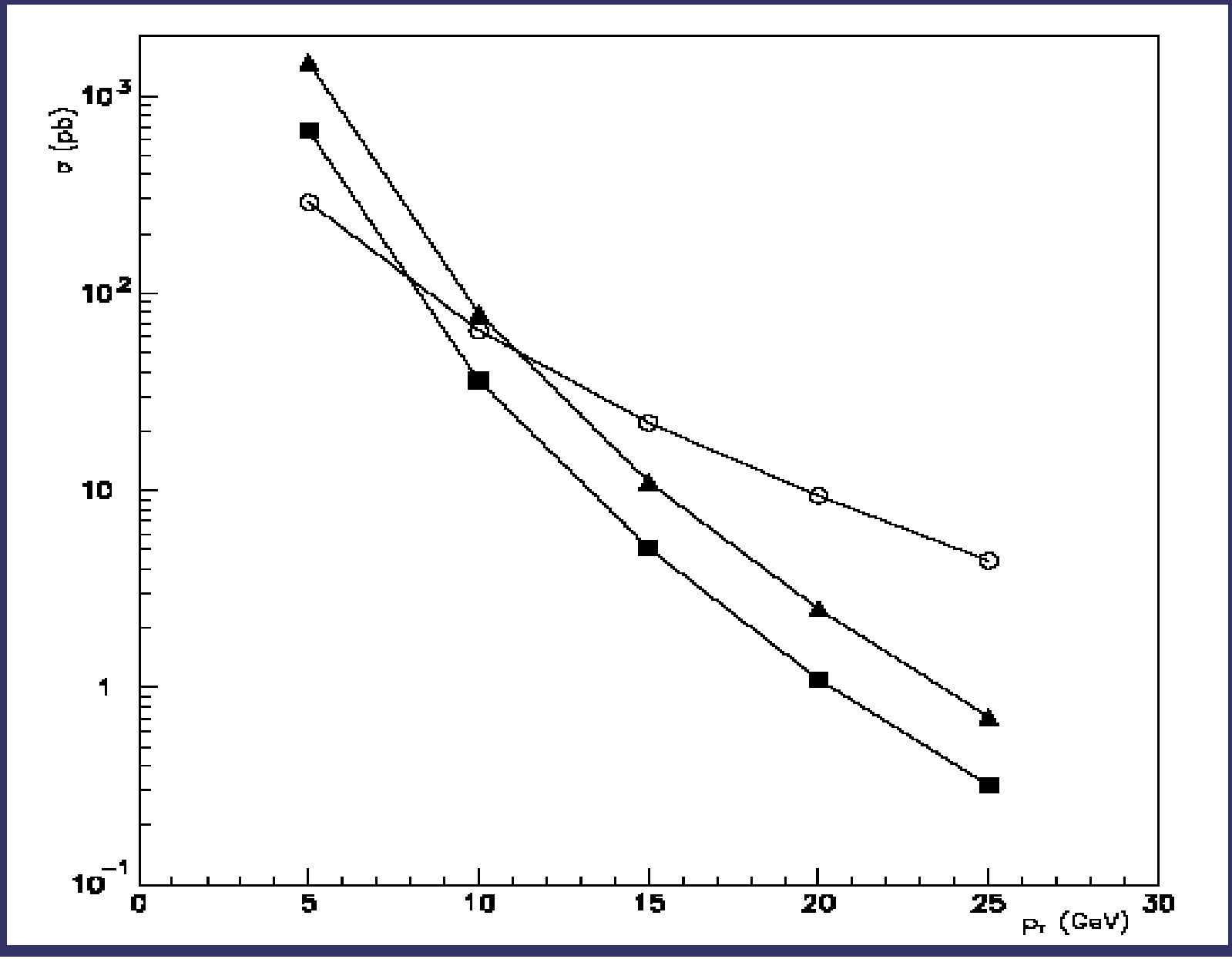


FIG. 5. Total cross section for the production of a W accompanied by 3 jets, as a function of the minimum-p_T cut, for: higher-order QCD processes (open circles), double-parton interactions (triangles), multiple interactions (squares).

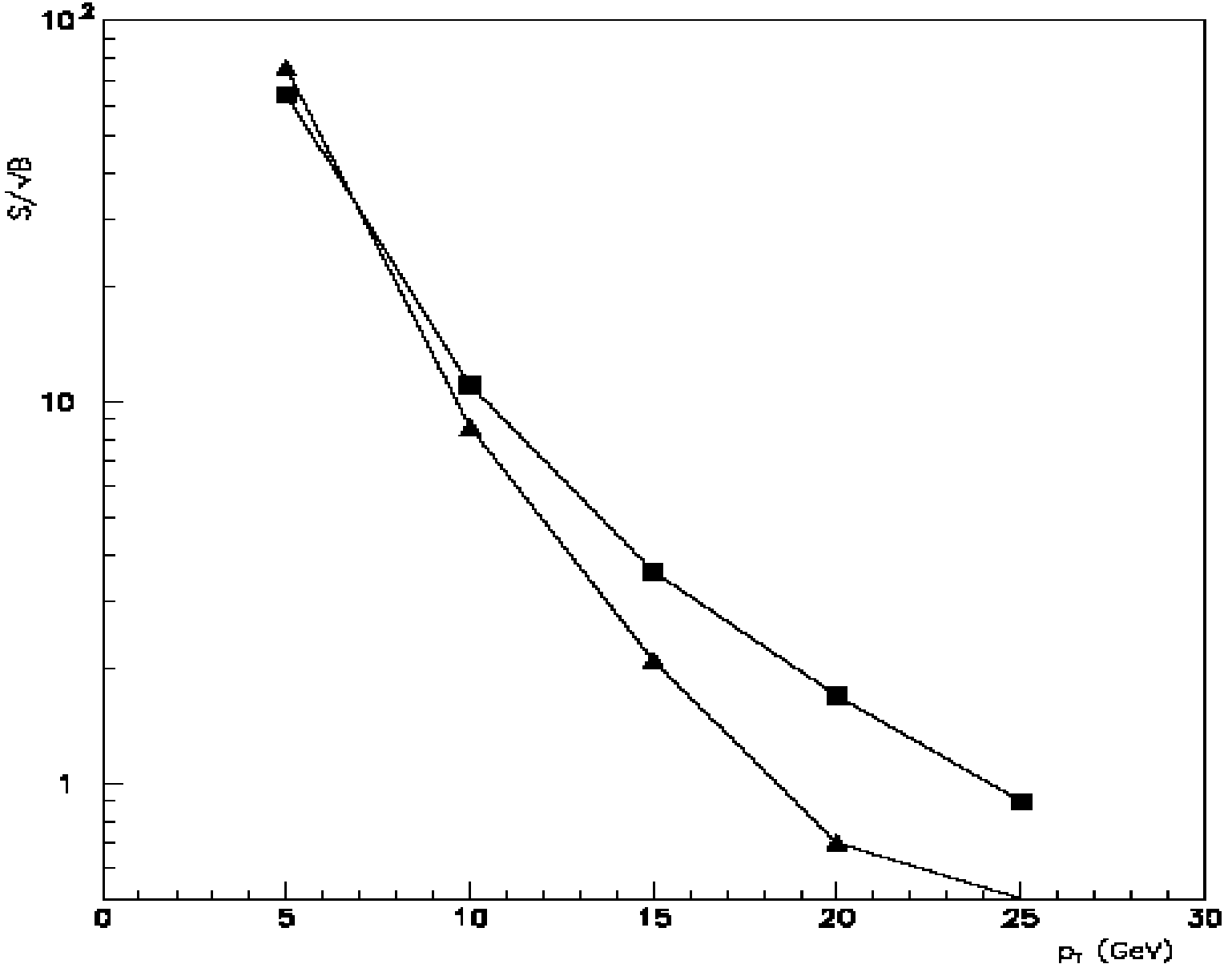


FIG. 4. Statistical significance (Signal/$\sqrt{\text{background}}$) of the double-parton interactions for the production of a W + 2-jets (squares) and W + 3-jets (triangles) as a function of the minimum transverse momenta of the jets.