

Exclusive / Diffractive / Tagging **– low Q^2 needs**

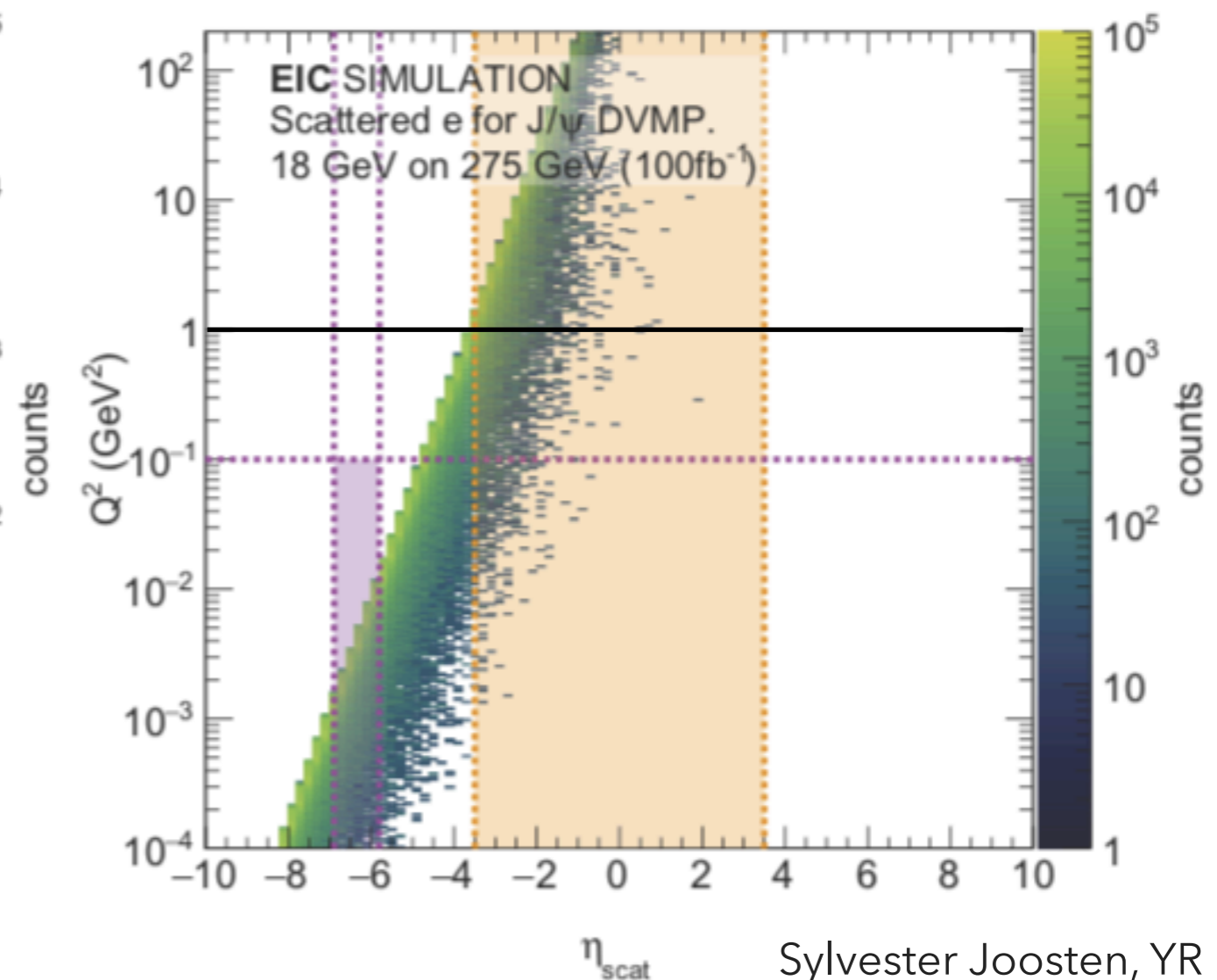
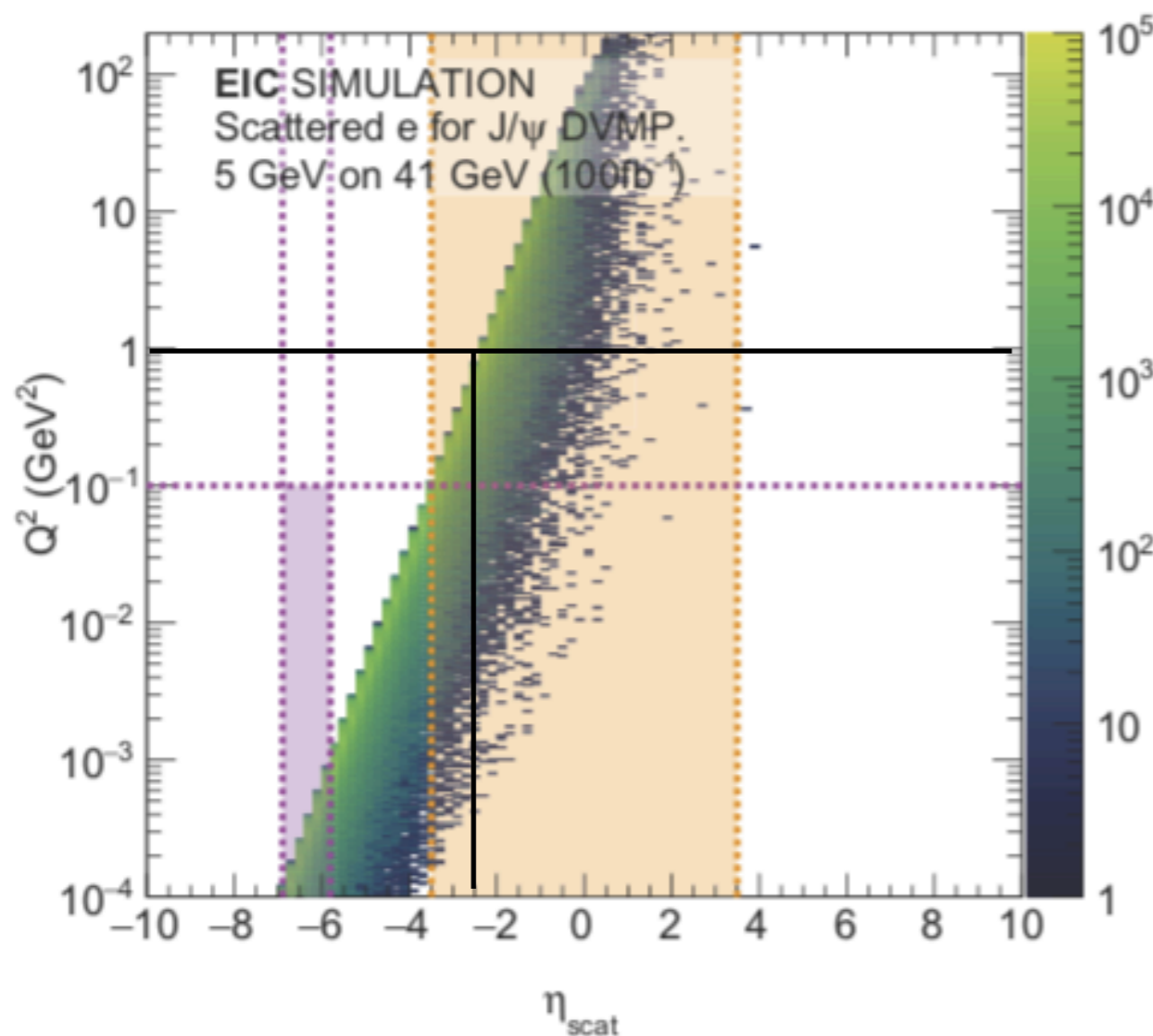
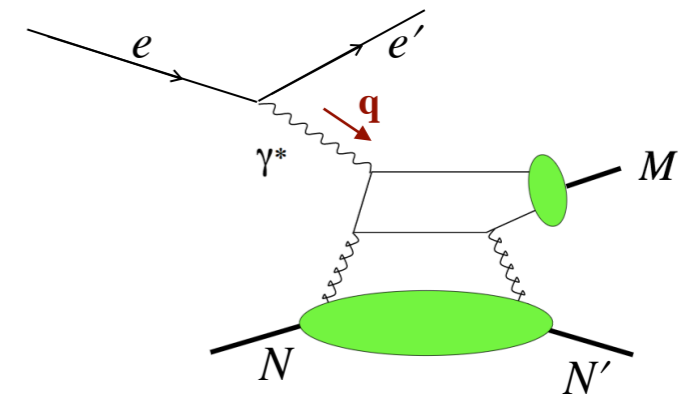
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GD/I Meeting, 6th February 2023

Hard exclusive electroproduction

- For hard-exclusive electro-production processes relying on factorisation, $Q^2 > 1 \text{ GeV}^2$ (although that low limit is theoretically debatable... some go higher).

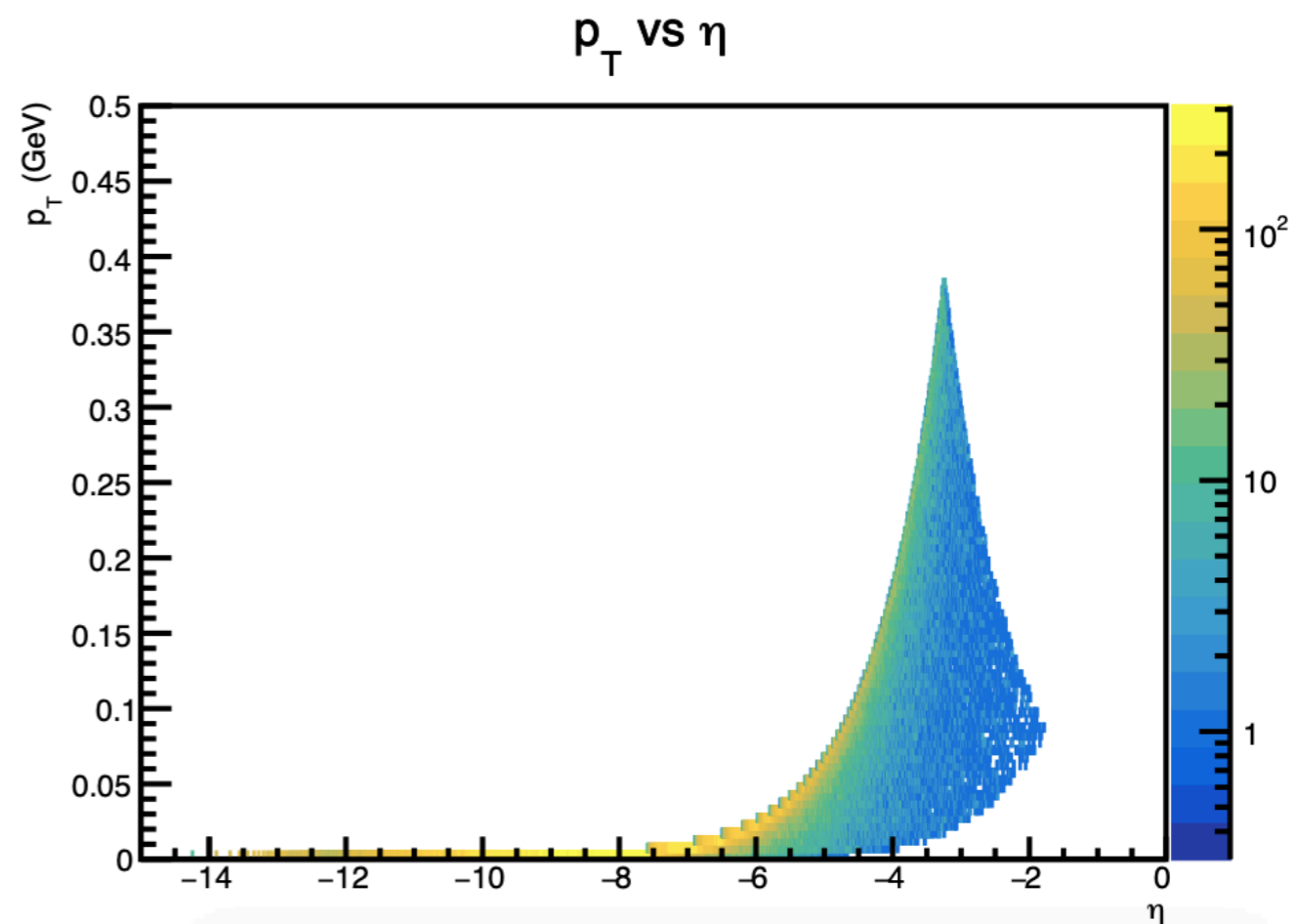
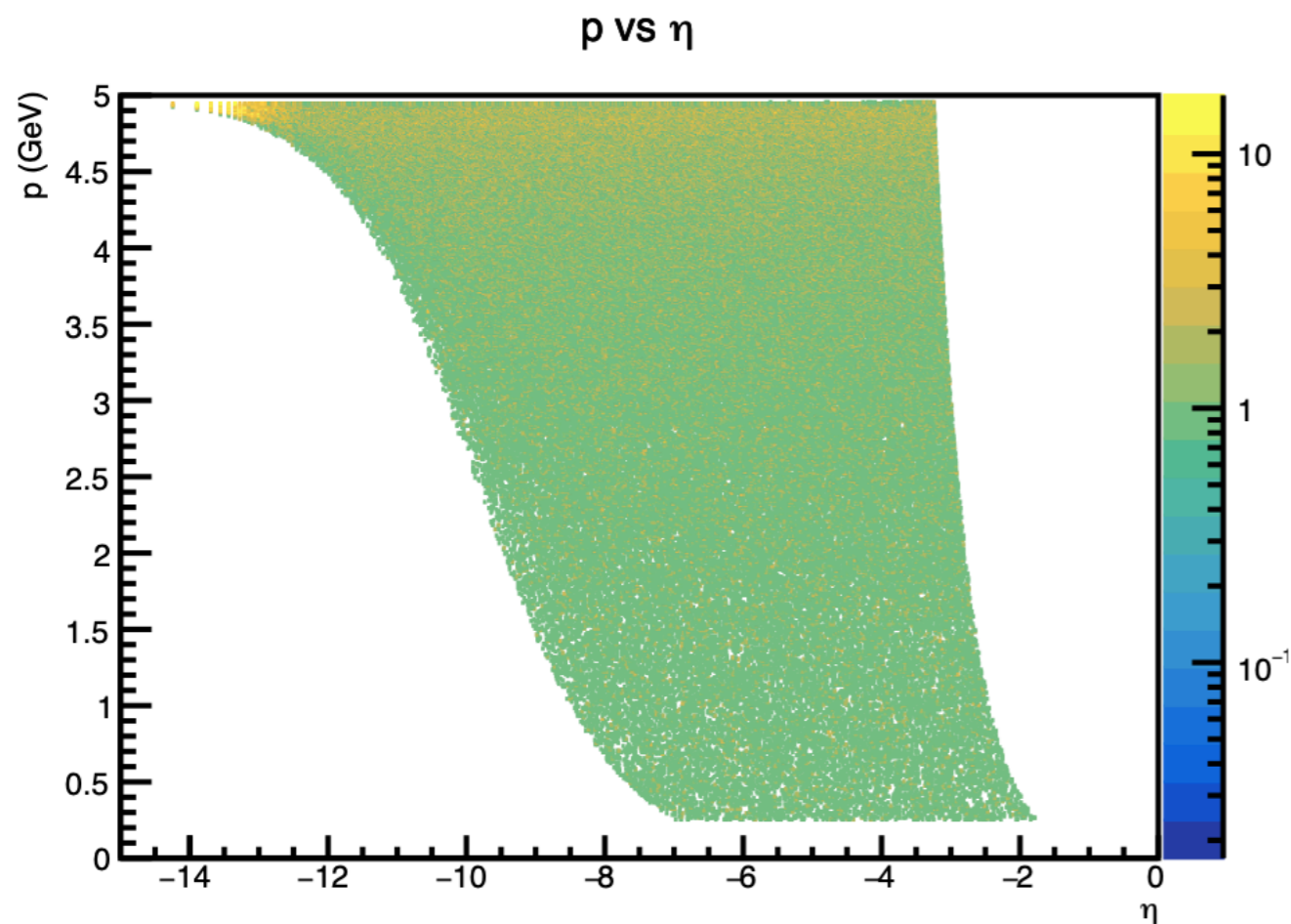
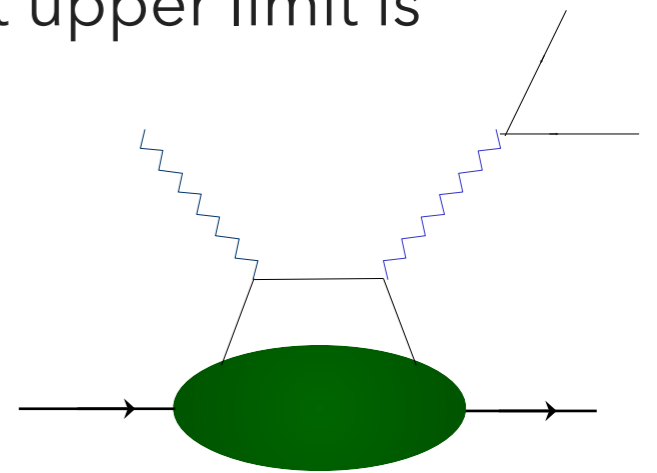
e.g., J/ψ generated electro- and photoproduction:



Photoproduction

- For photoproduction, typically $Q^2 < 0.1 \text{ GeV}^2$ (although that upper limit is also theoretically debatable... some, again, go higher).

e.g., TCS generated, scattered electron from 5 GeV beam, for $Q^2 < 0.1 \text{ GeV}^2$:

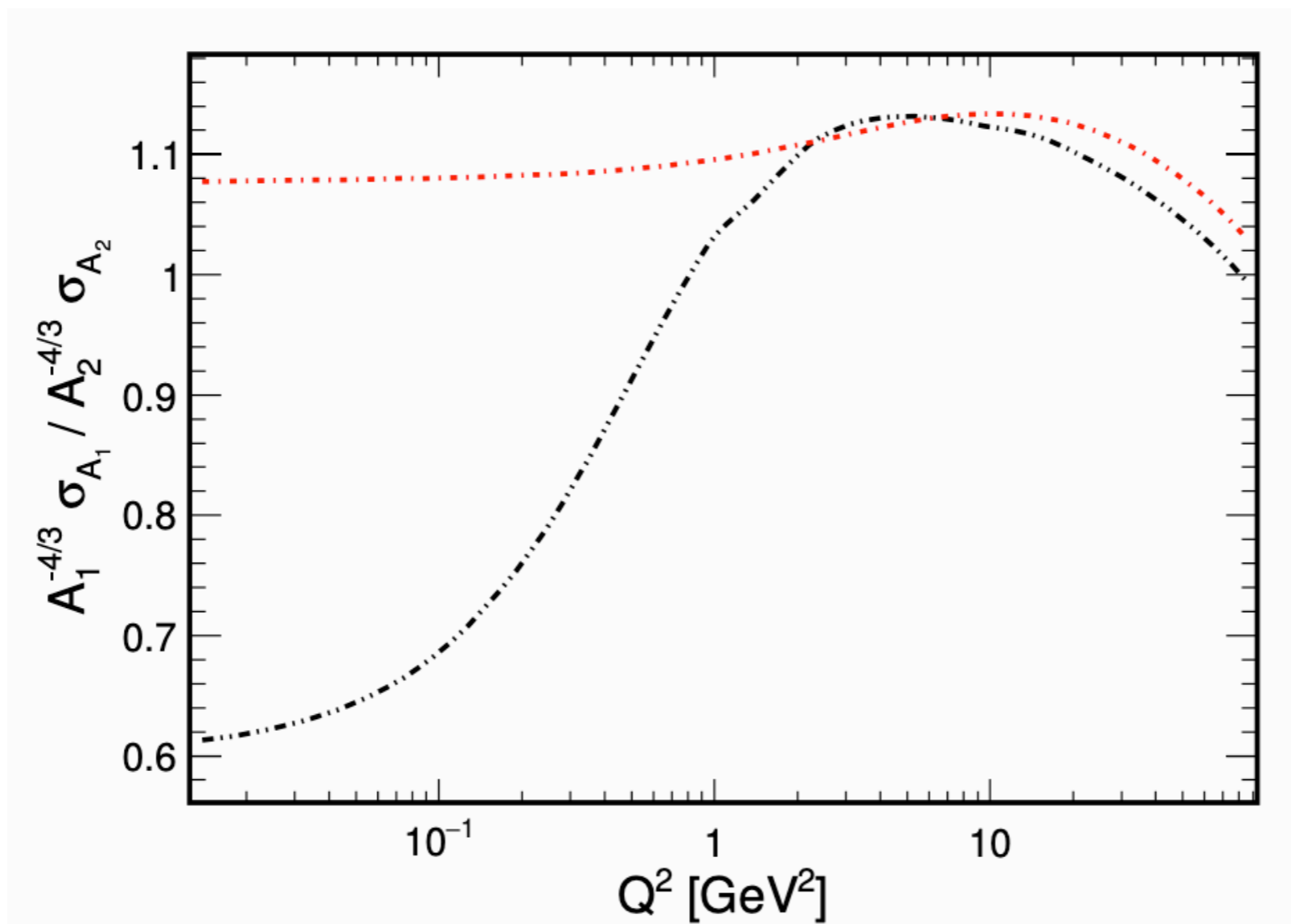


For 18 GeV electron, max η falls to around -4.5.

Probes of saturation / shadowing

- For some processes, e.g.: to probe shadowing or saturation, measurements across the full Q^2 range, from 0 to max, are required.

e. g. J/Ψ (red) and ρ (black) production from nuclei, shadowing is largest for the lowest Q^2 , effect reduces as Q^2 increases:



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