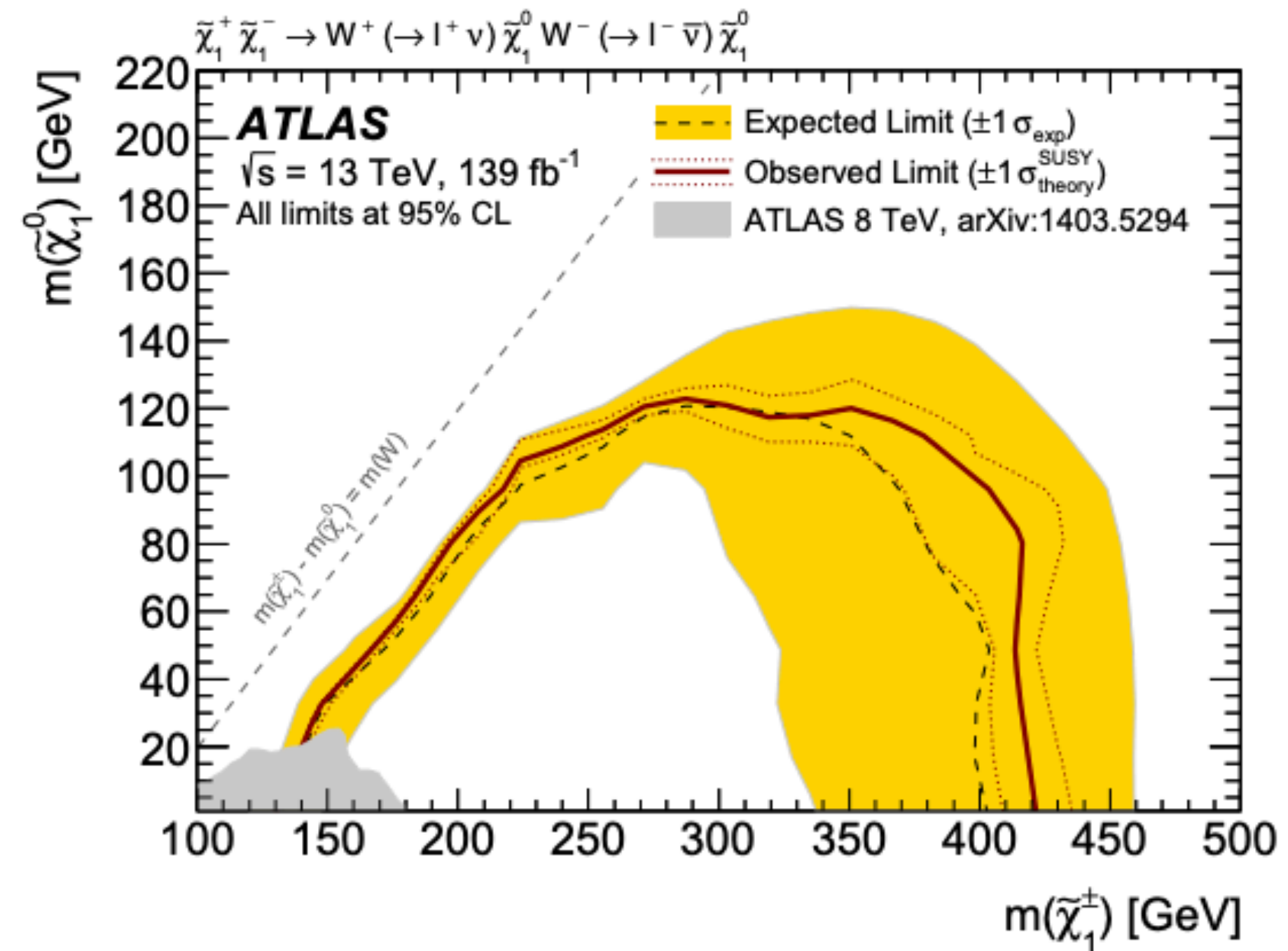# Dilepton probes for charginos
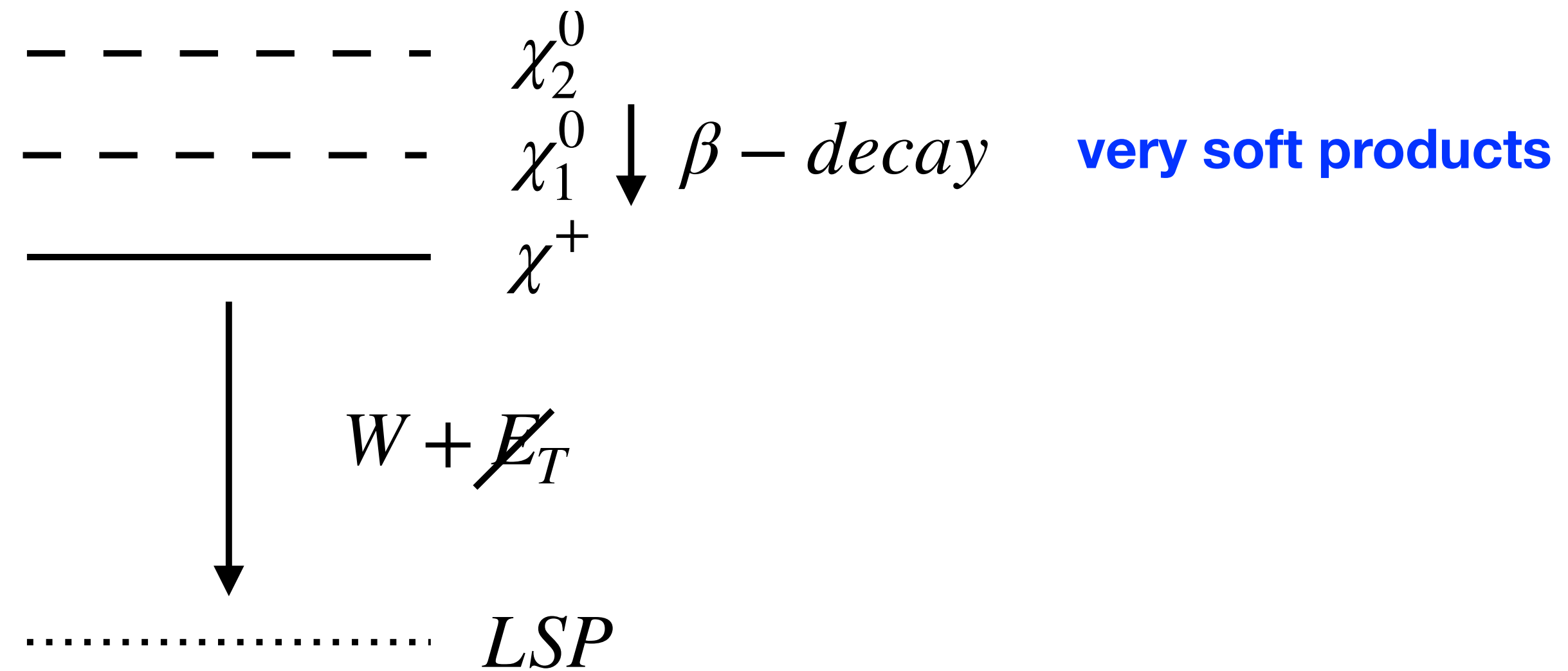
Antonio Delgado and Adam Martin arXiv:1912.03215
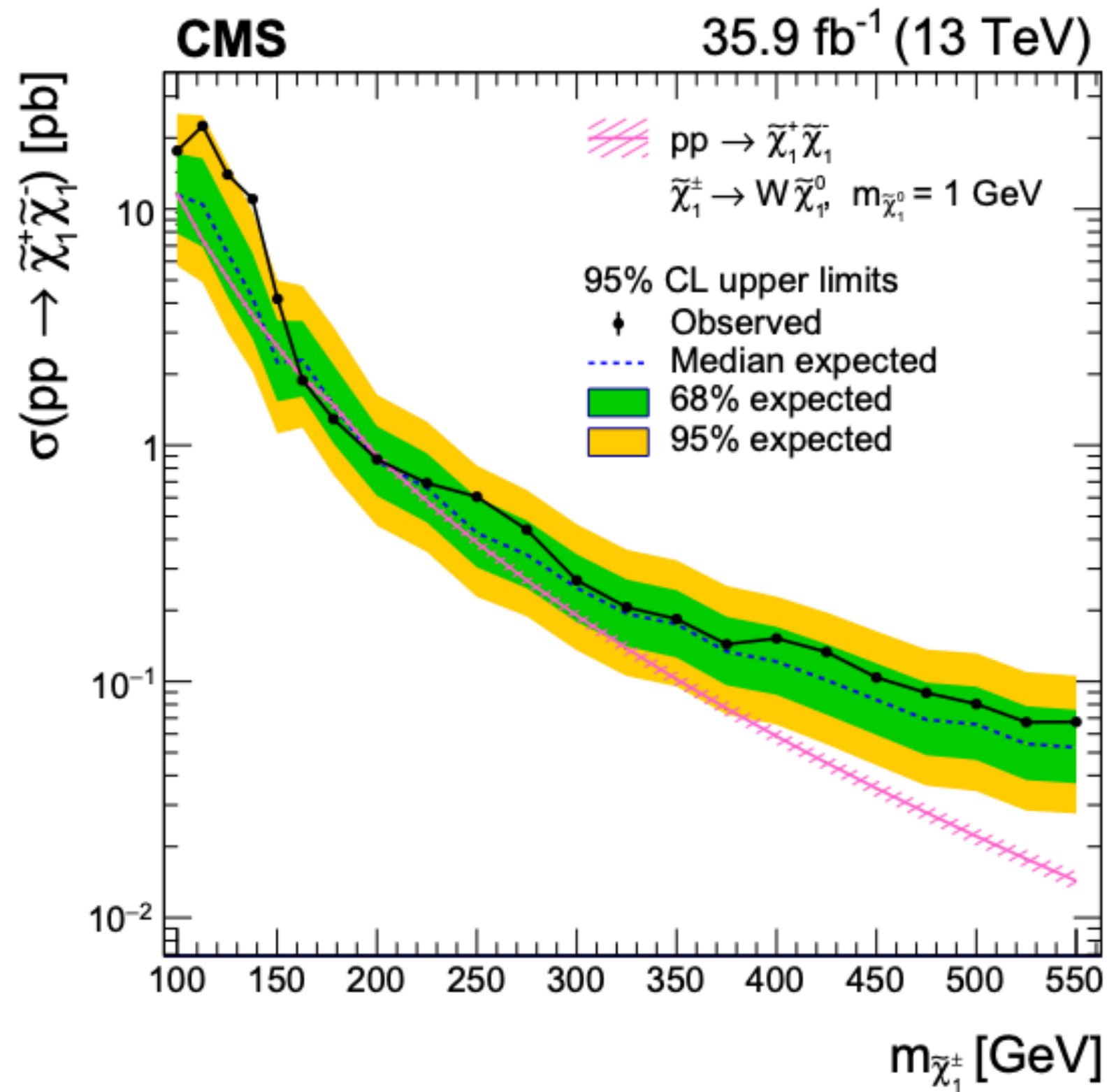
- These analyses assumed an spectrum with an isolated charged state that never occurs in SUSY (Winos and Higginos have neutral components)

- Moreover if the LSP is a neutralino the spectrum would be far more sensitive to trilepton searchers

$$\chi_2^0$$

$$\chi_1^0 \;\downarrow\; \beta - decay \qquad \text{very soft products}$$

$$\chi^+$$

$$W + \not{E}_T$$

$$LSP$$
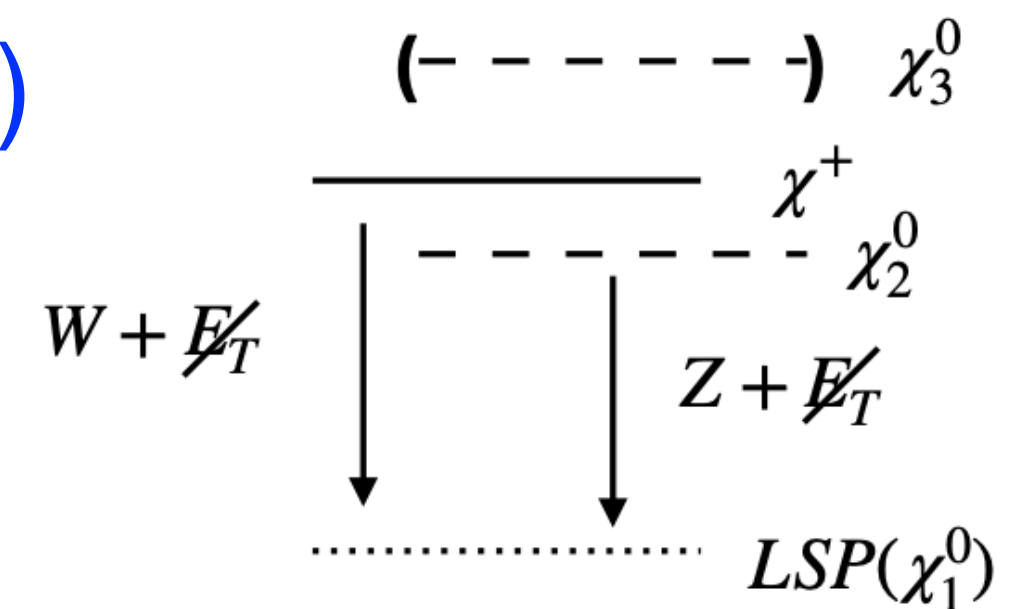
Sample spectrum with the chargino as NLSP

- This spectrum is insensitive to tri-leptons if the neutralinos do not decay to the LSP directly (not a neutralino) and the whole doublet contributes to the same signal WW+MET

Δm=10 GeV

Δm=5 GeV

m_χ(GeV)

Displaced vertex

$m_{3/2}$(eV)
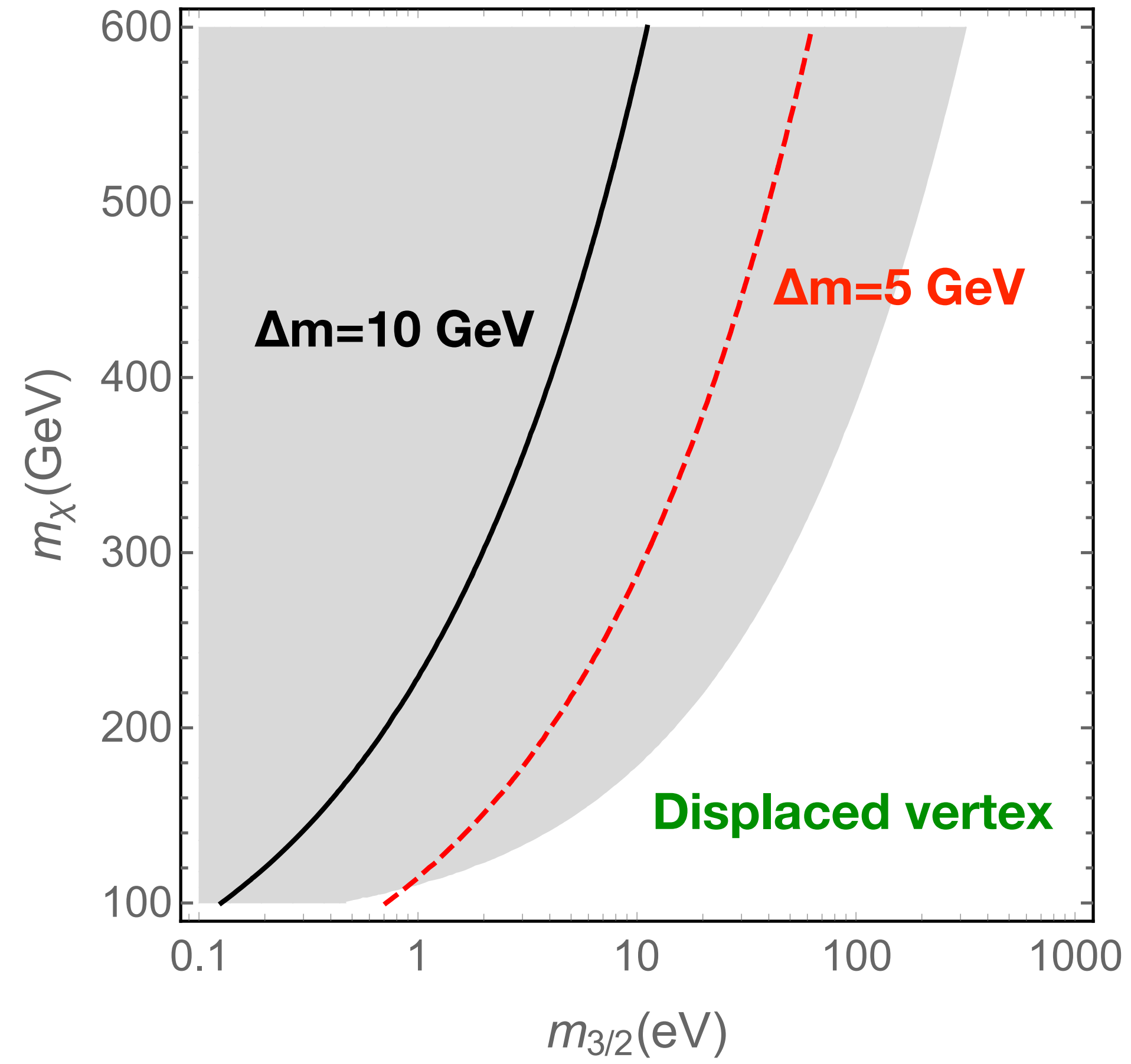
Region of the parameter space where the neutralino do not decay to the LSP

- There is a search (arXiv:1908.08215) for WW+MET, with the full run II data

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m>460 GeV
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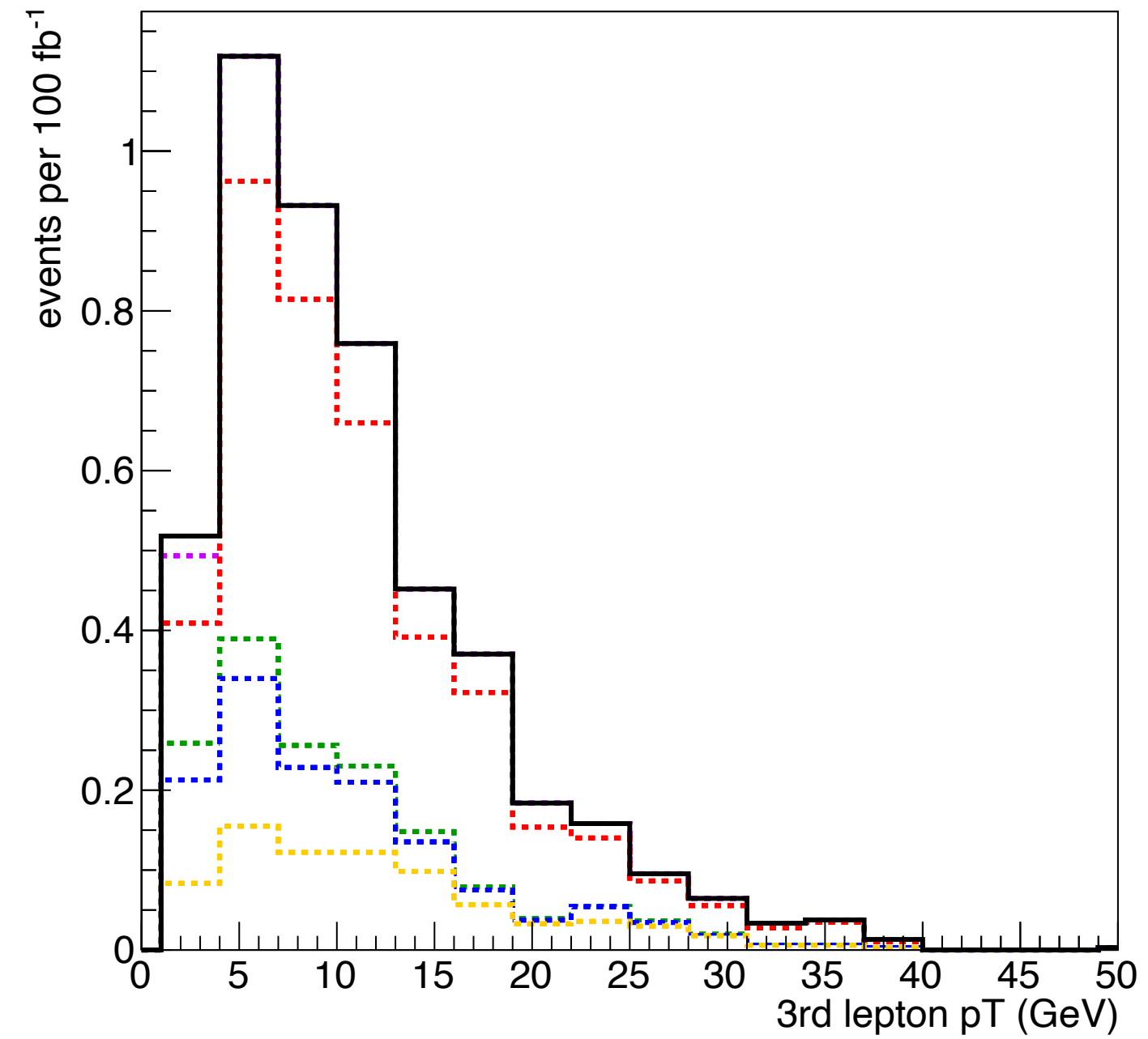(ATLAS quotes a bound of 410 GeV
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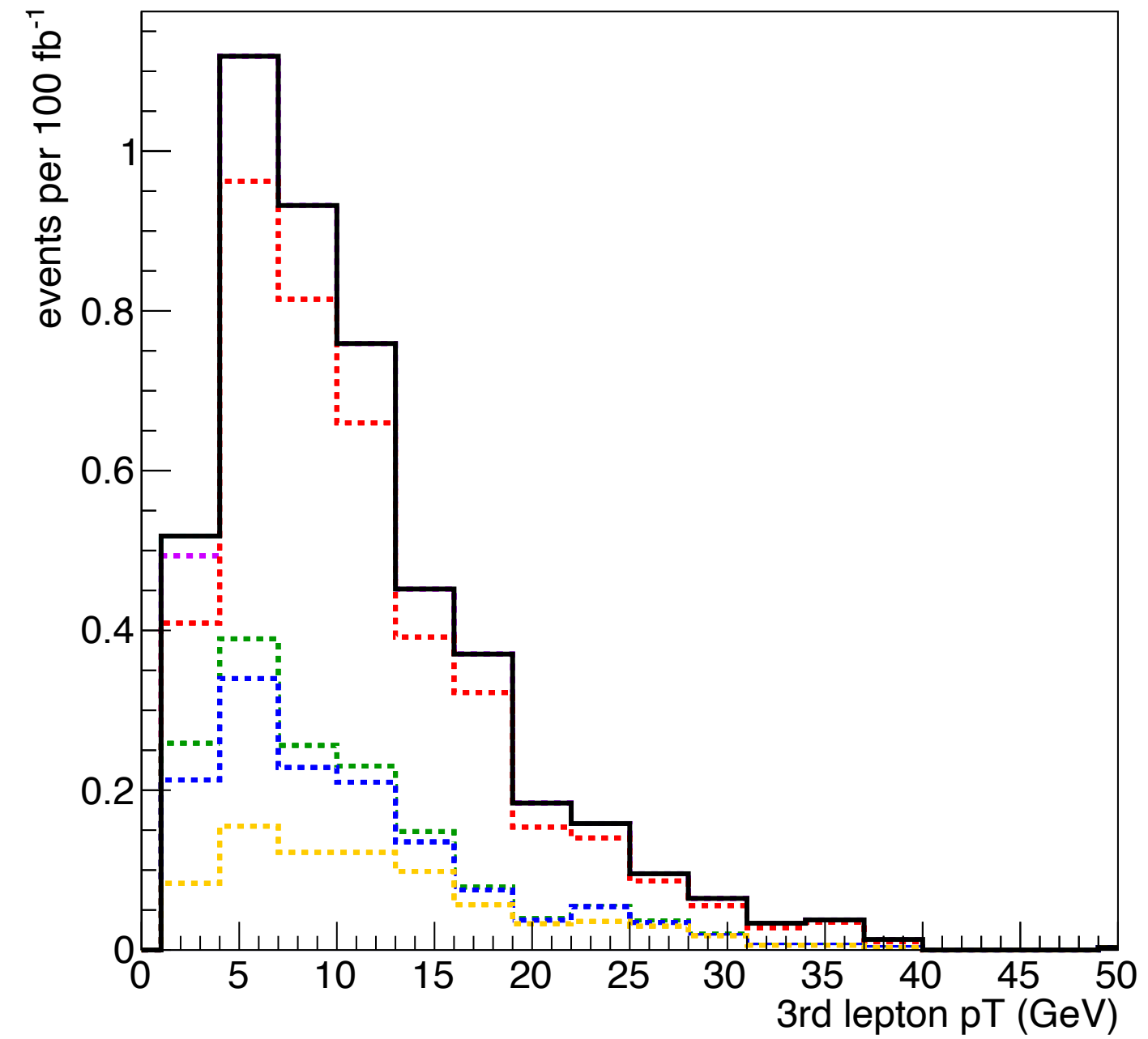
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**The figure indicates the spectrum of the
Third lepton that could be use
To discriminate between models**

- It is crucial when interpreting a search that the spectrum analyzed can be realized in a complete model.