

MONO-HIGGS+DM (H->4L)

- The following distributions are obtained for Mono-Higgs and Dark Matter final state mediated via Z-prime.
- The Higgs decays in this case to four leptons via ZZ^* .
- The distributions obtained after ISR, FSR, Showering, Hadronisation, Detector resolution effects (not DELPHES) and lepton isolations.
- The following lepton isolation criteria have been implemented:

$$\begin{aligned} & \text{pt}(\text{lep}) > 5 \text{ GeV and } |\text{eta}(\text{lep})| < 2.5 \\ & \text{Delta_R}(\text{ll}) > 0.2 \text{ and } \text{Delta_R}(\text{lj}) > 0.4 \end{aligned}$$

The sum of the pt deposit around a lepton within a cone of $R=0.3$ is less than 10% of the pt of the lepton.

- All the distributions are normalised to 100 fb^{-1} luminosity.

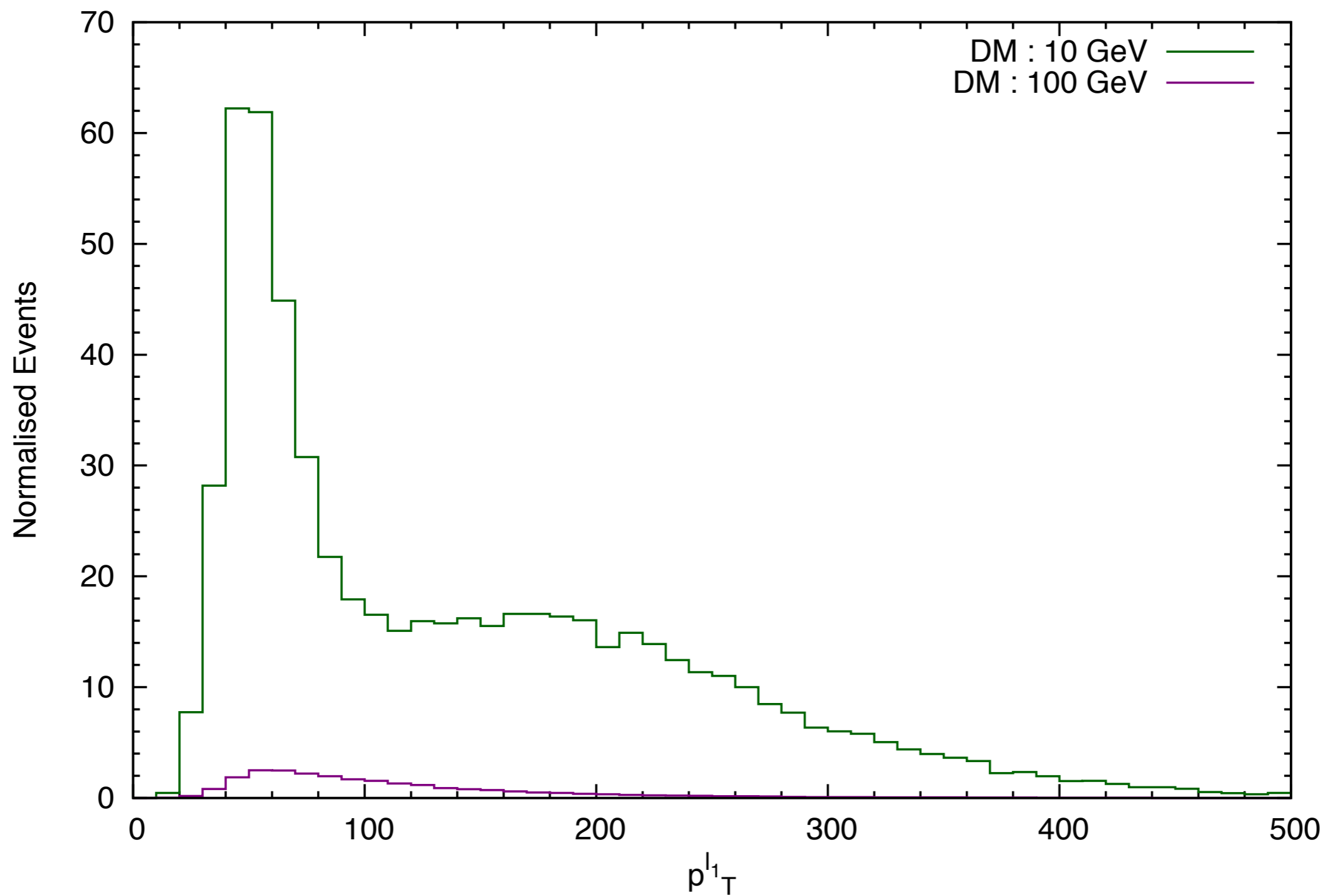


Fig 1: p_T distribution of the highest p_T lepton in the 4l+MET channel for two model points (10 GeV and 100 GeV DM mass). A luminosity of 100 fb⁻¹ is assumed for the distributions.

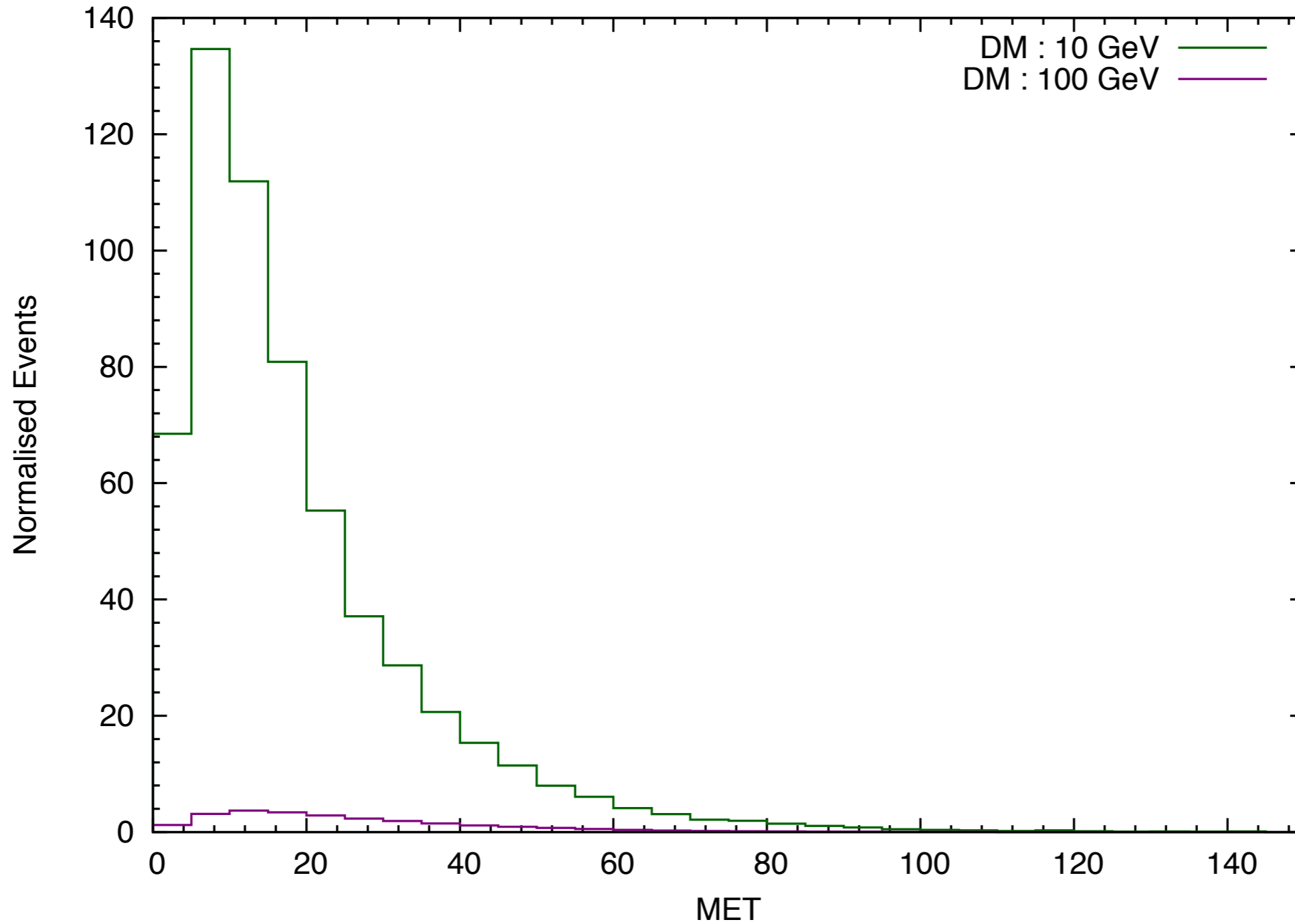


Fig 2: MET distribution in the 4l+MET channel for two model points (10 GeV and 100 GeV DM mass).

A luminosity of 100 fb⁻¹ is assumed for the distributions.

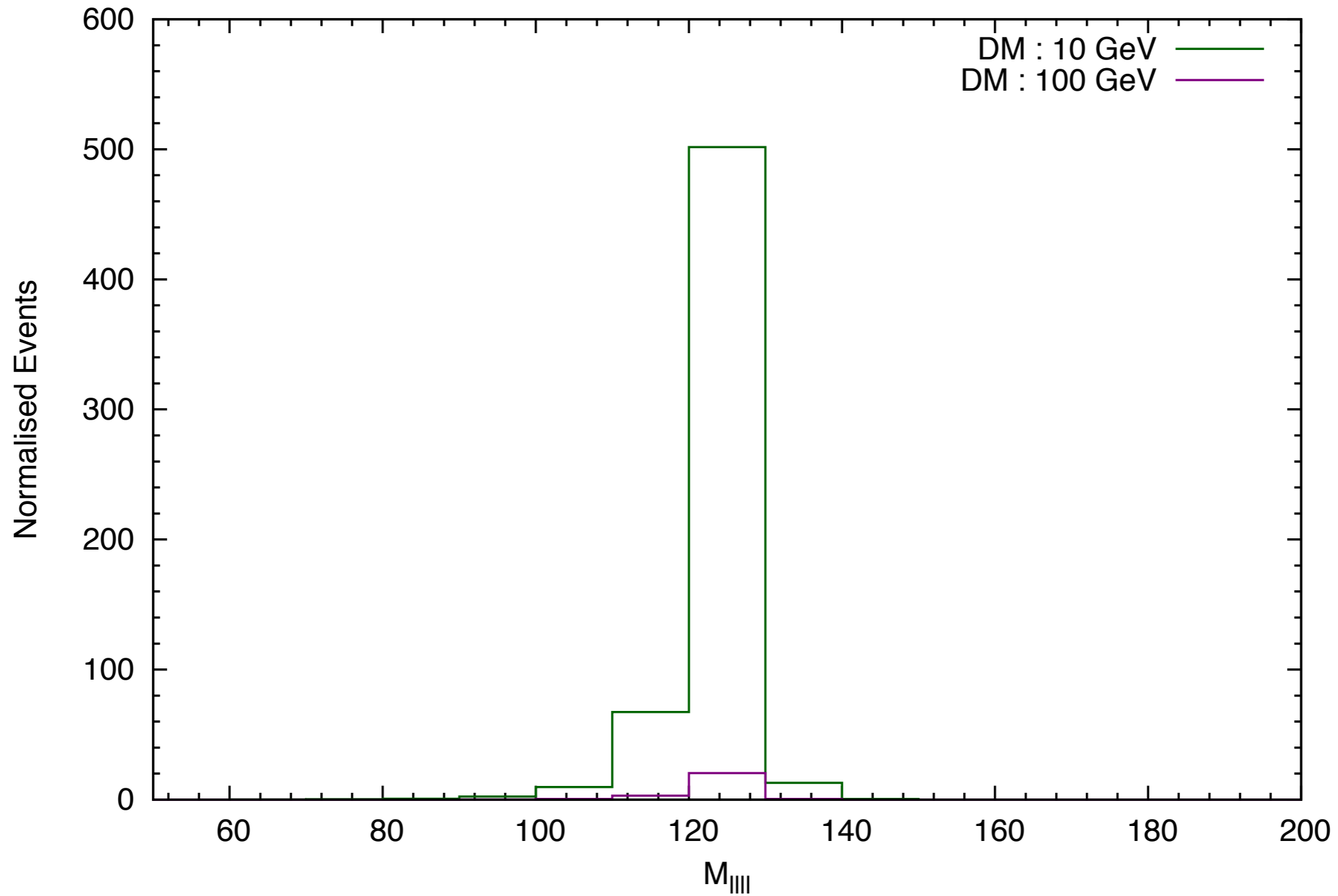


Fig 3: The invariant mass of the 4 leptons for two model points (10 GeV and 100 GeV DM mass). A luminosity of 100 fb^{-1} is assumed for the distributions. The distribution has a peak around the mass of the Higgs as expected.

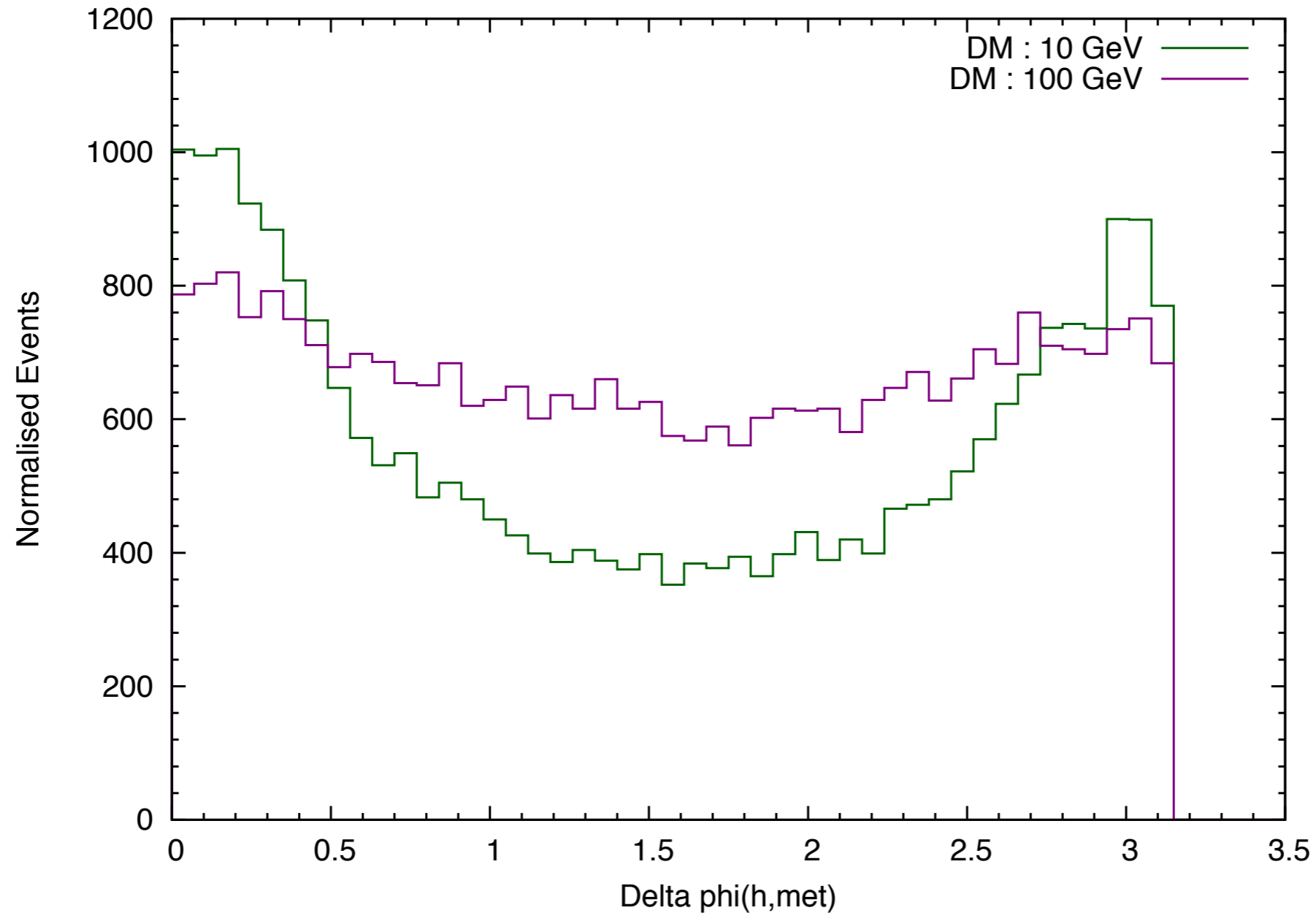


Fig 4: The azimuthal angle between the reconstructed Higgs (in the 4l channel) and the MET for two model points (10 GeV and 100 GeV DM mass). The assumed luminosity for the distributions is 100 fb⁻¹.

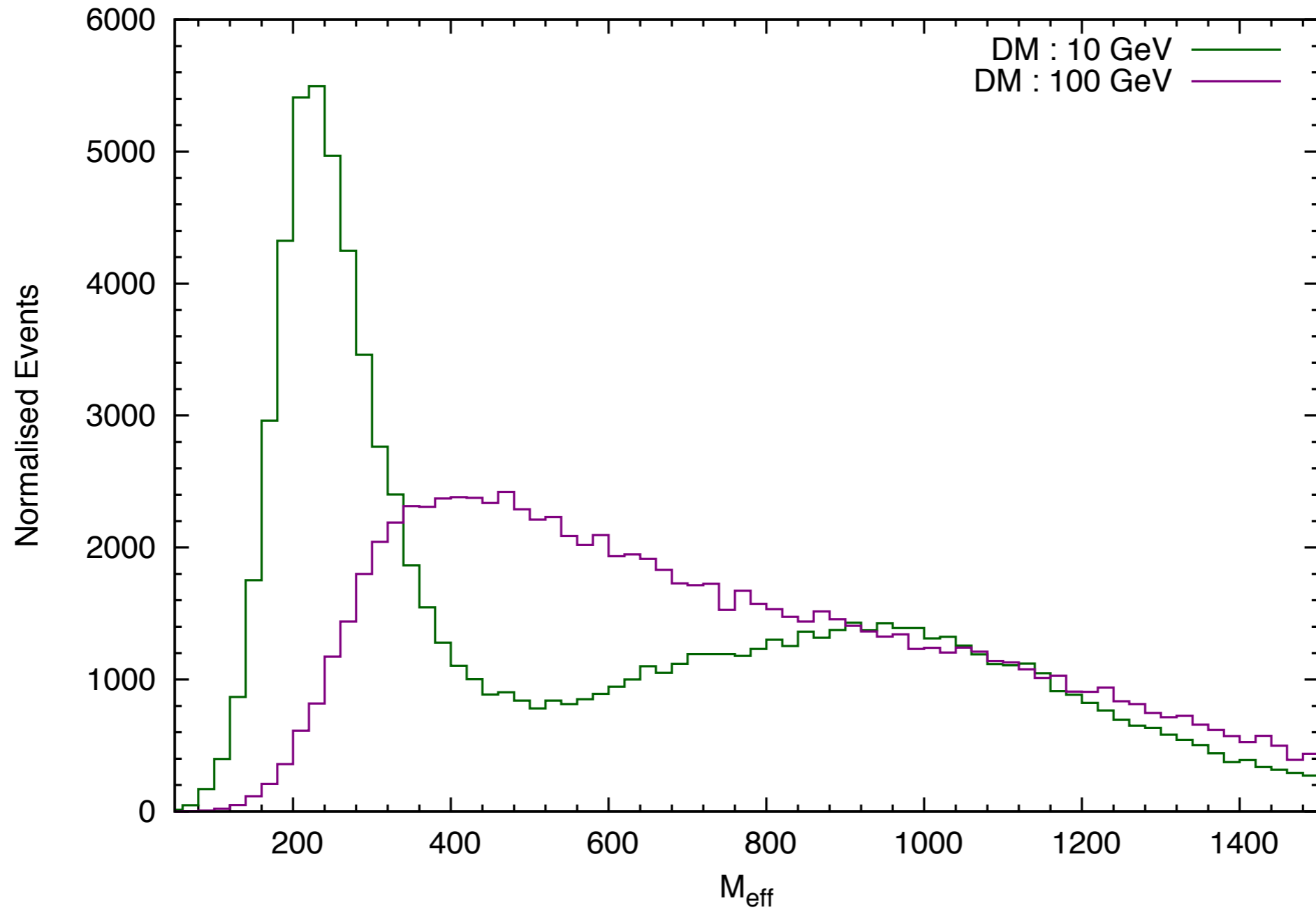


Fig 5: The effective mass (defined as, pt sum of all visible particles+MET) in the inclusive decay of the Higgs.

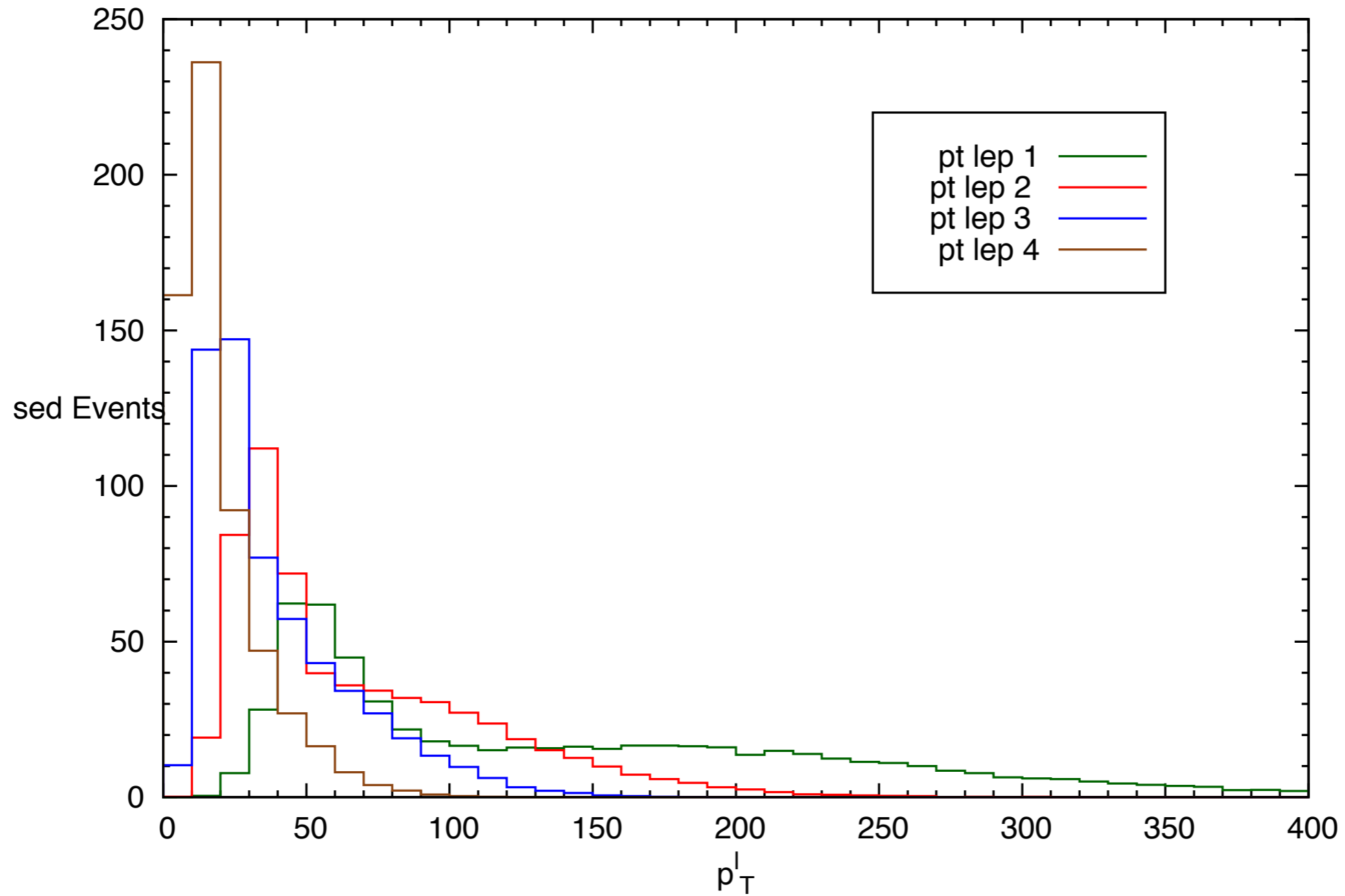


Fig 6: p_T distributions of all the four leptons in the 4l+MET final state for the model points with 10 GeV DM.