Search of pion in chargino decay
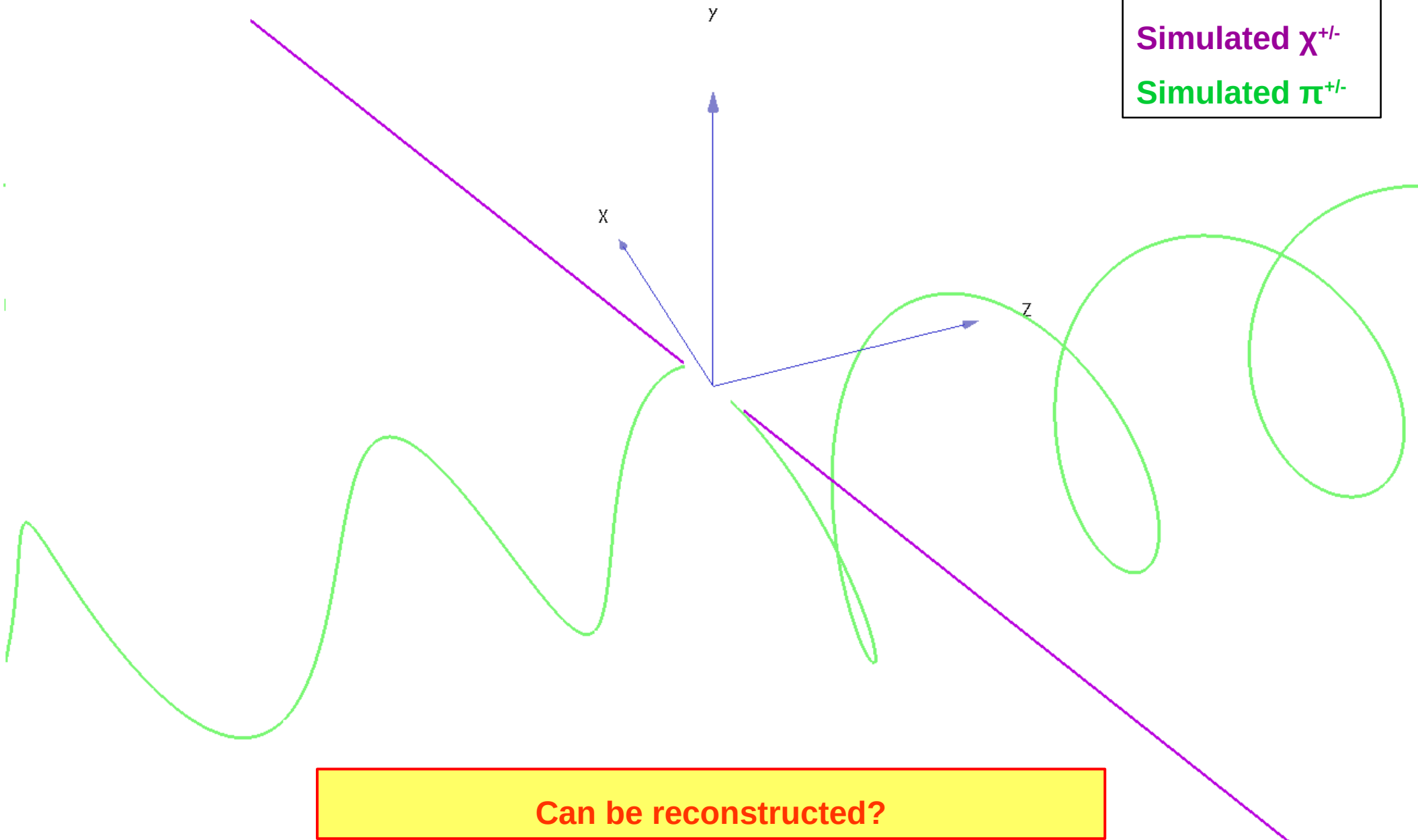
Erica Brondolin, Ulrike Schnoor

One event

Simulated χ$^{+/-}$

Simulated π$^{+/-}$

y

X

Z

Can be reconstructed?

One event

Yes! Two (2/4) tracks!

One event

Simulated χ$^{+/-}$

Simulated π$^{+/-}$

Reco tracks

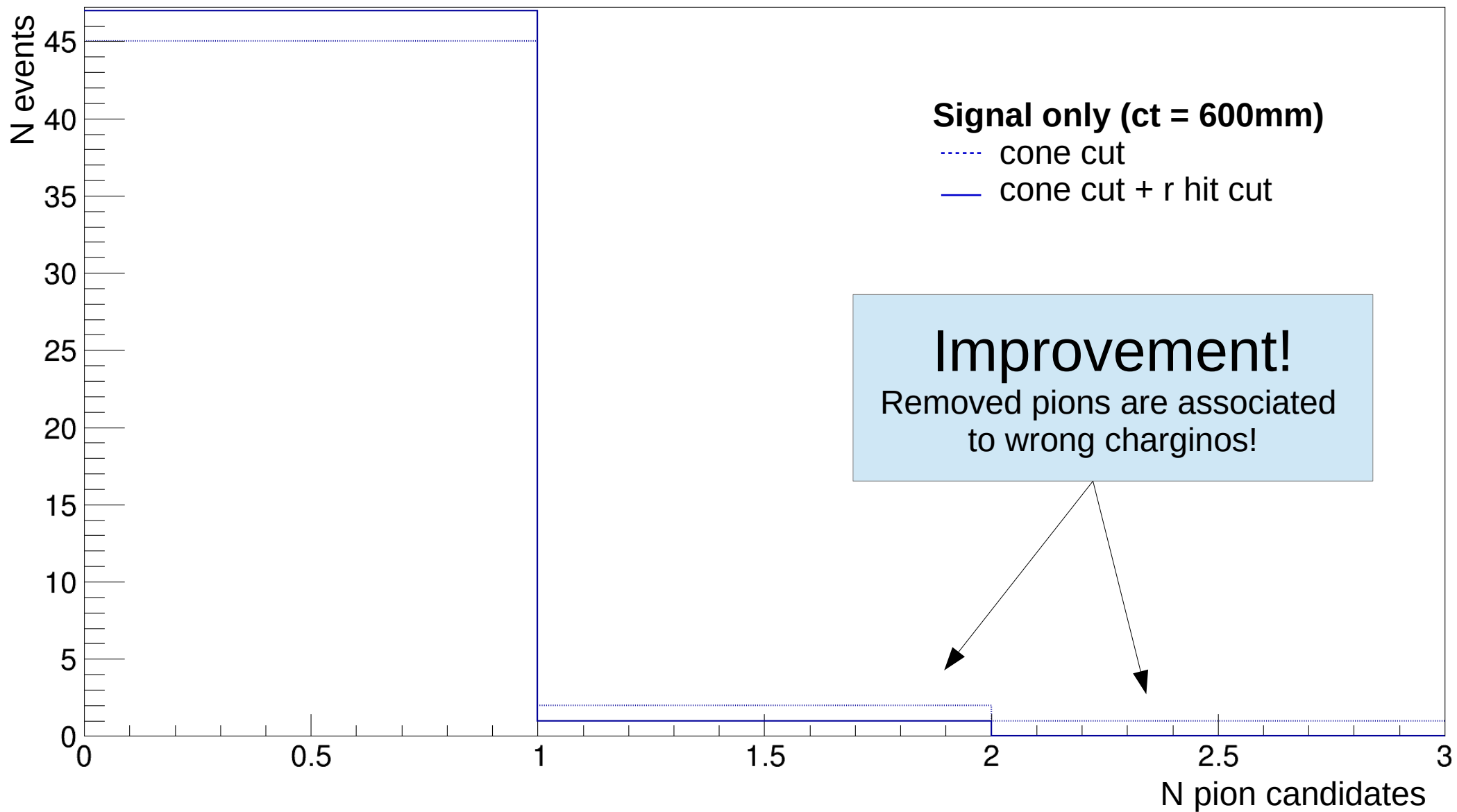**Yes! Two (2/4) tracks: one χ and one π!**

Strategy
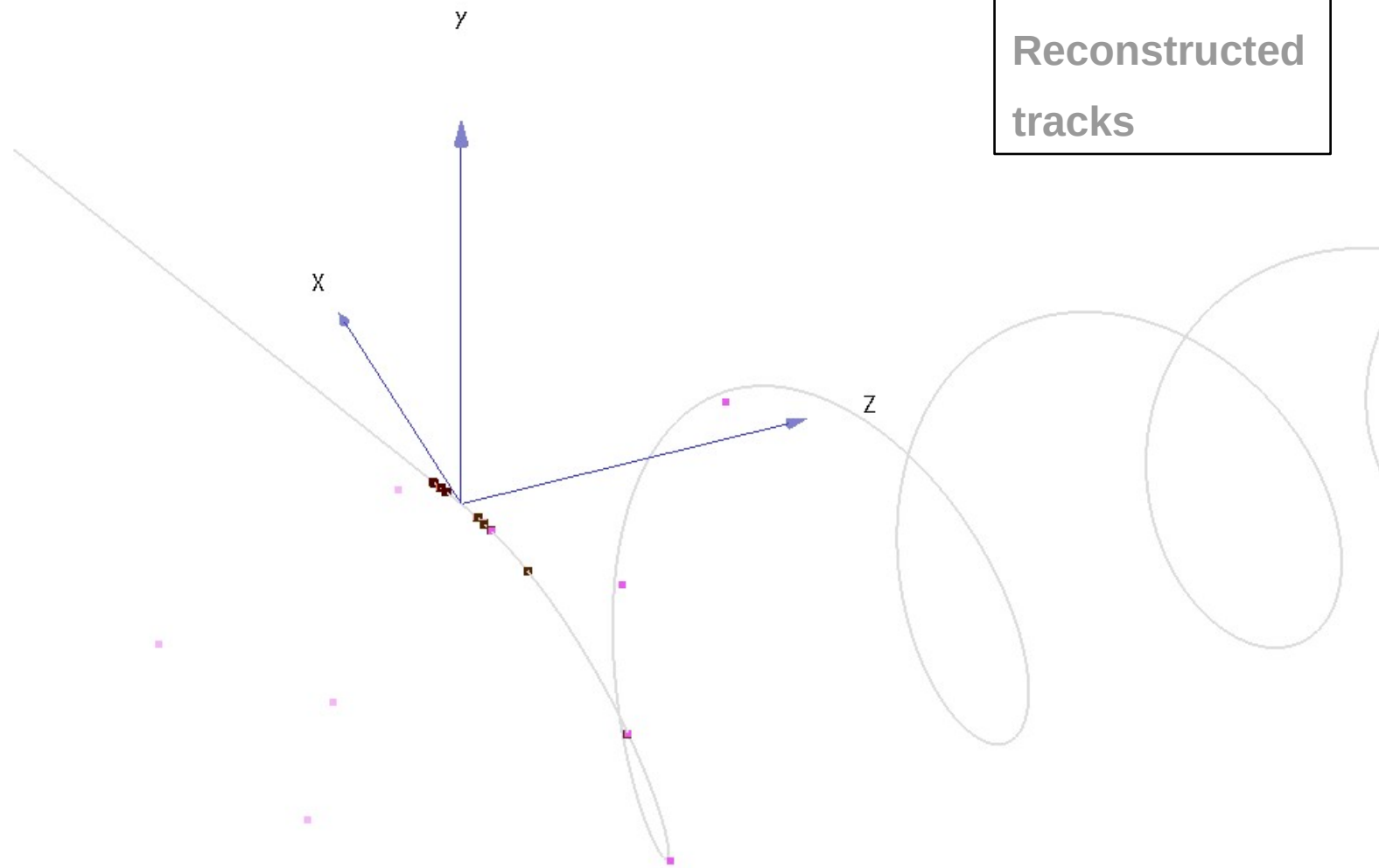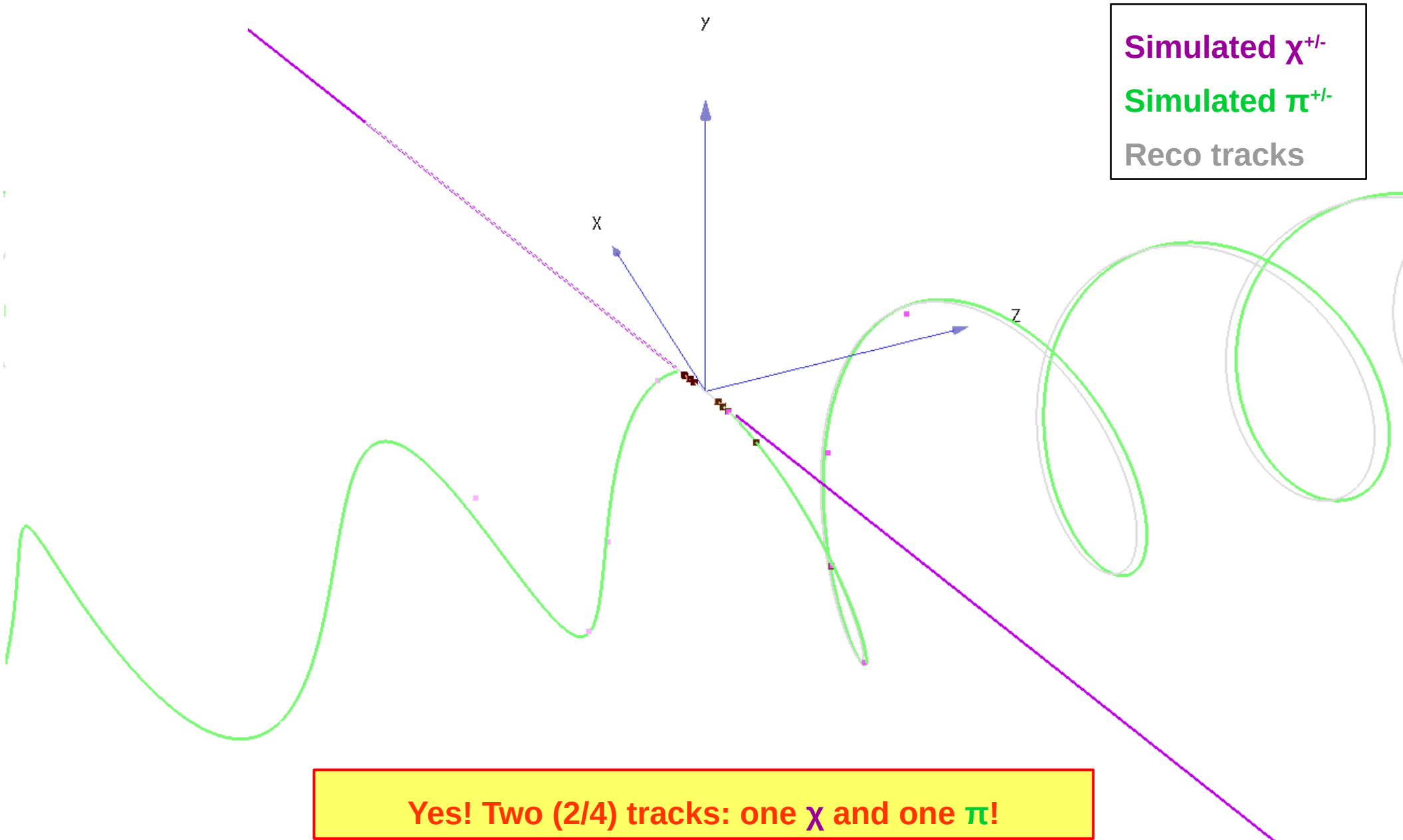
1. Establish chargino candidates (ch1 and ch2 w/ highest reco pT)

2. If n chargino candidate >= 1 :

    1. Run on the track collection and compute **distance in theta/phi** w.r.t. ch1 and ch2

    2. Assign track to either ch1 or ch2 (min distance)

    3. If distance > 1.0: skip the track

    4. Check on **hit position in r**:

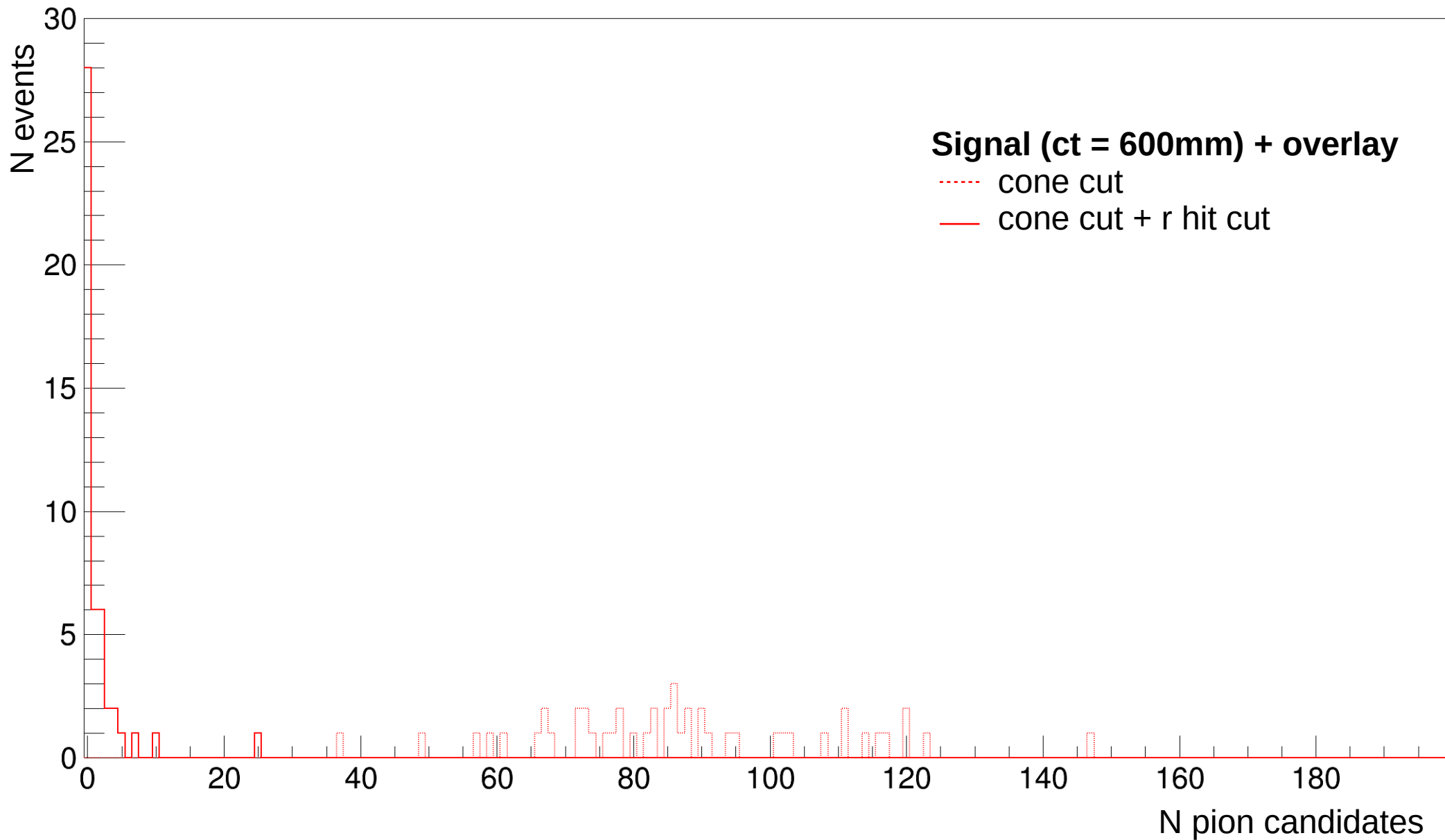   r-coord of pion first hit must be > r-coord of chargino's last hit

- Test on 48 events (2 files)

**Signal only (ct = 600mm)**
- - - - cone cut
———— cone cut + r hit cut

Improvement!
Removed pions are associated
to wrong charginos!

N events
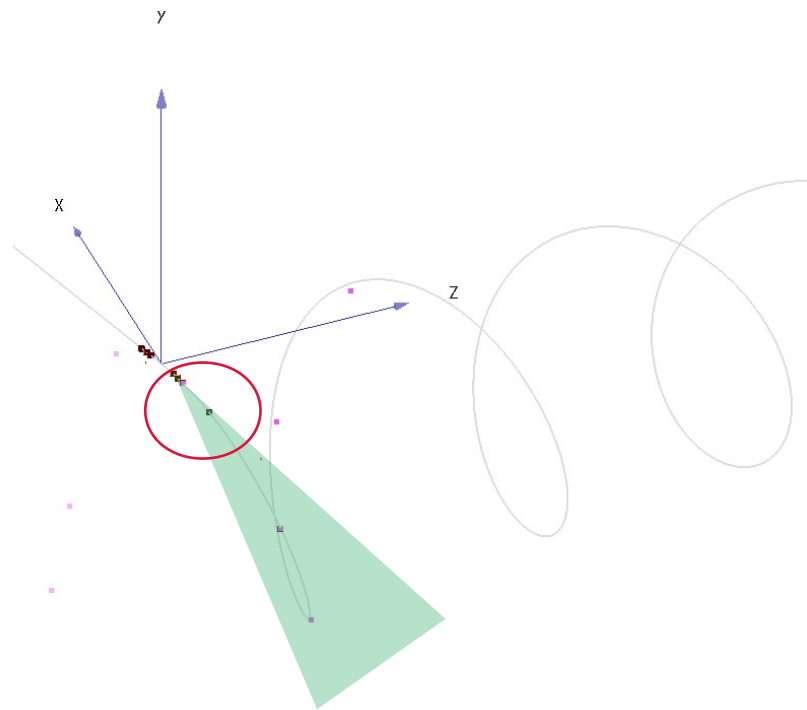
N pion candidates

#pion candidates

- Test on 48 events

Conclusions and discussion
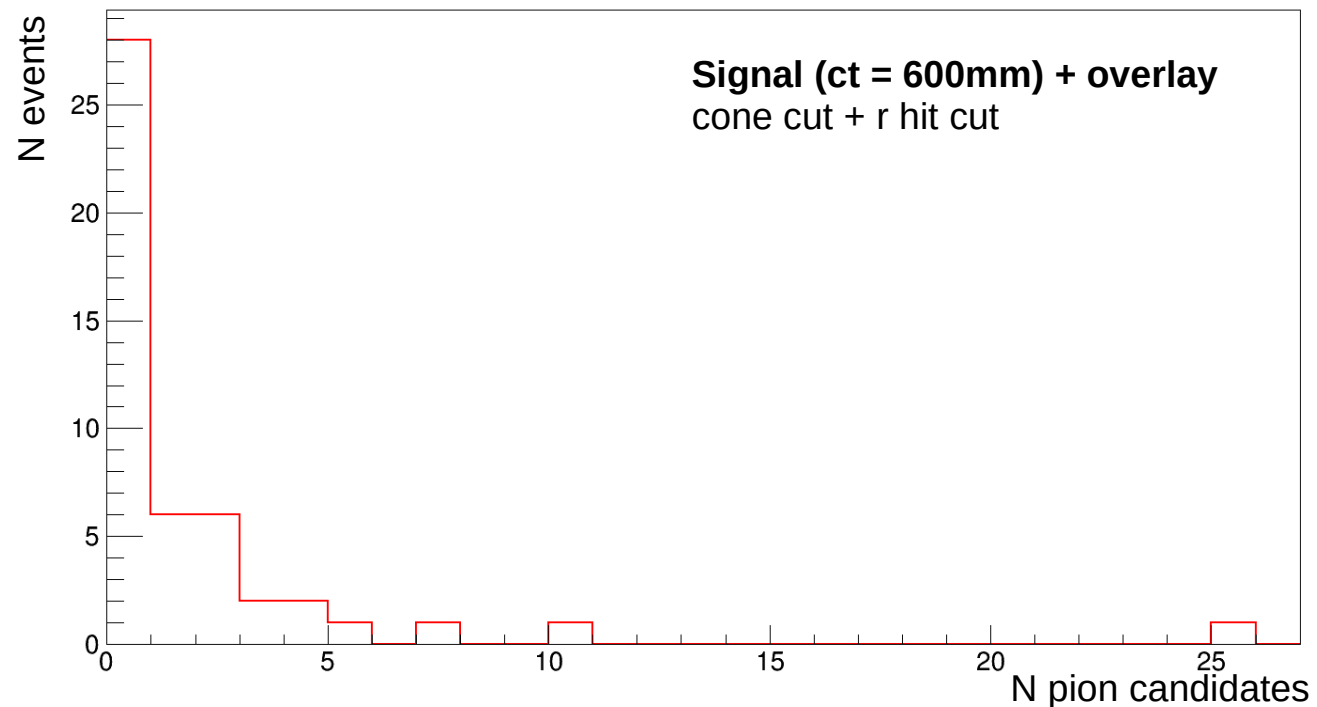
- **Debug info and pion variables in TTree are in place**

- **Looking at the sig only:**

  In most of the events longer chargino are reconstructed

  In most of the events "prompter" pions are reconstructed

  (coming from shorter charginos!)

  → not easy to find events with both!
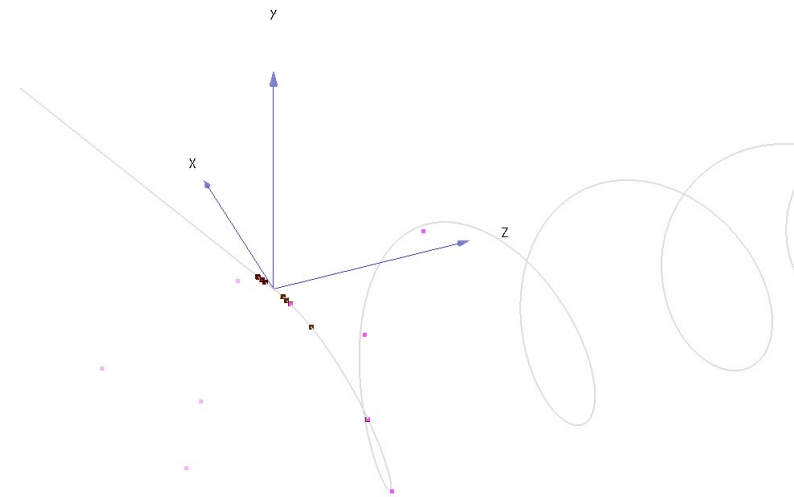
- **Looking at the sig+ove:**

  lots of pions still pass the preselection..

  can we use the pion at all?

Thank you for the attention!