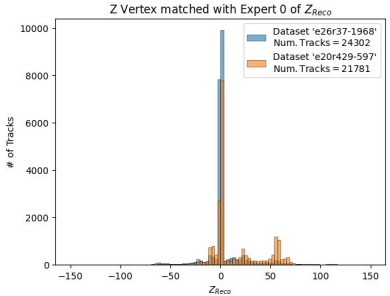
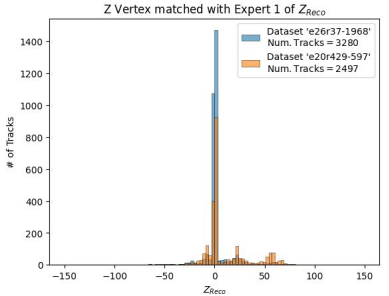
New Experiment 26 Training Update

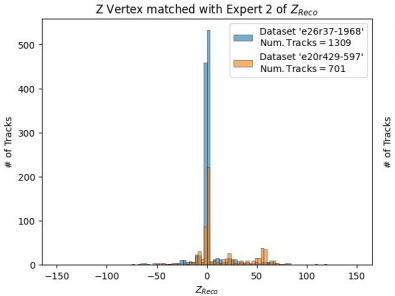
Felix Meggendorfer | Trigger Meeting | 12.01.2023

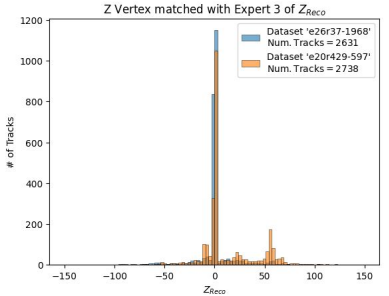
E20 vs E26 Dataset

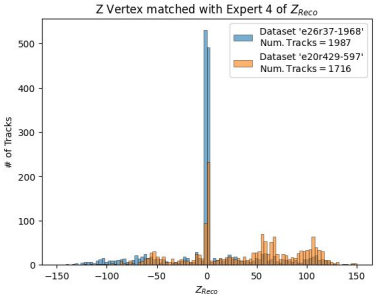
The most significant difference between the two datasets is the amount of background tracks coming from high z regions. In E20, the background spots from positive z are more present, while in E26 there are more background tracks from negative z. In the theta distribution the contribution of the stt can clearly be seen, as there are more tracks from shallow theta regions.

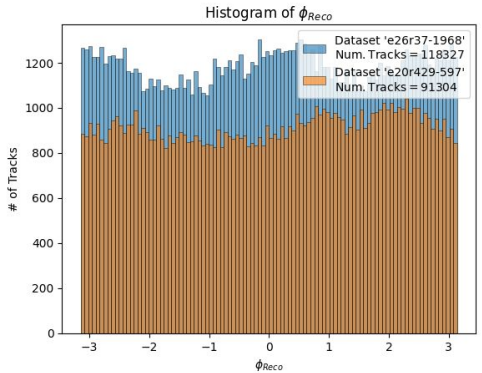


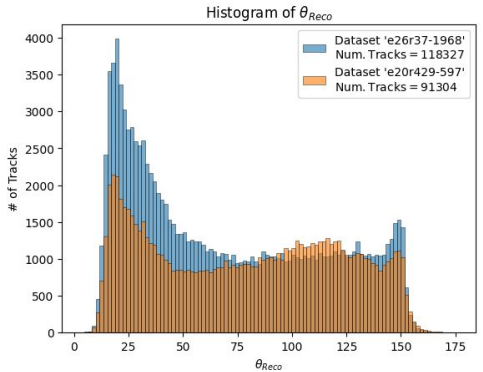


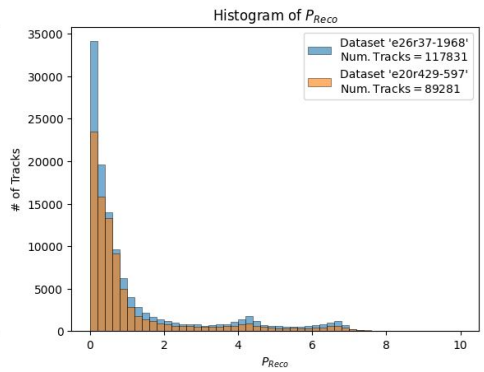


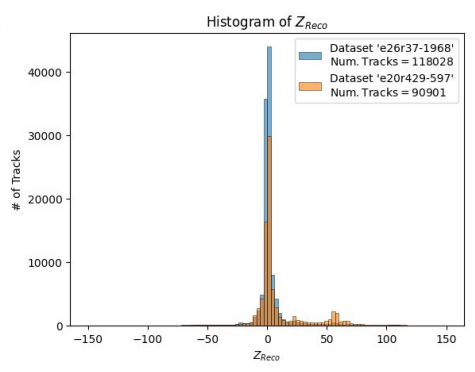






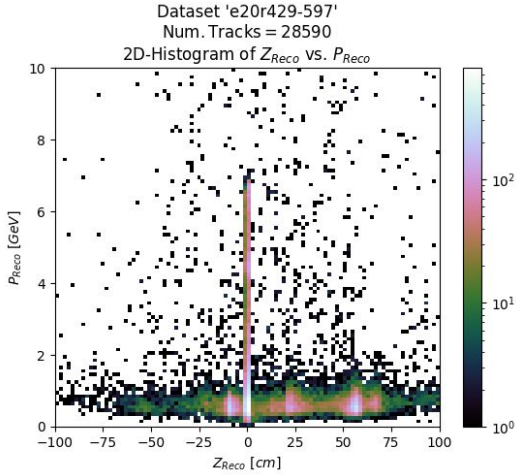


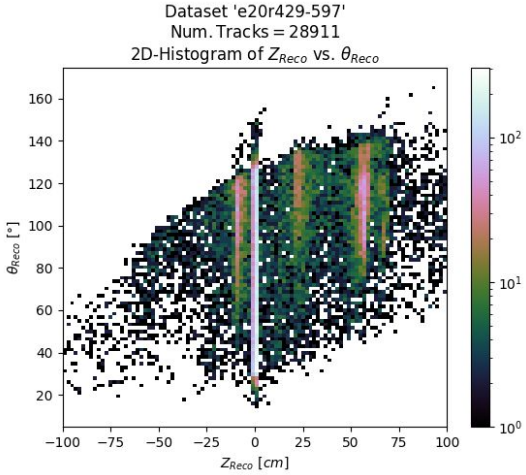


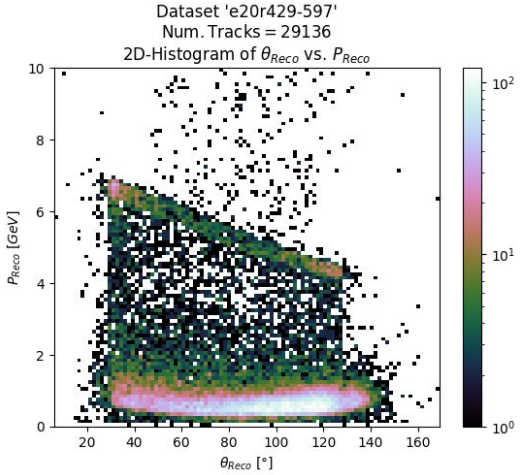


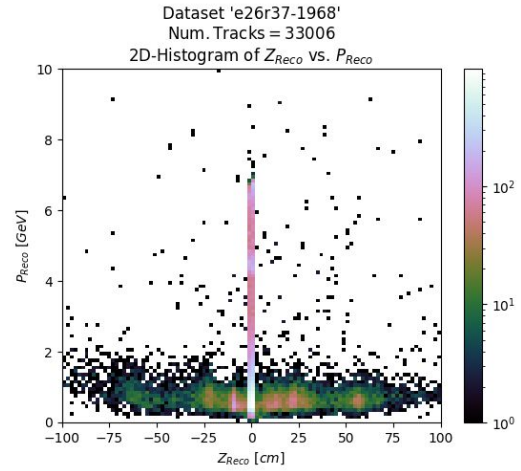
E20 vs E26 Dataset

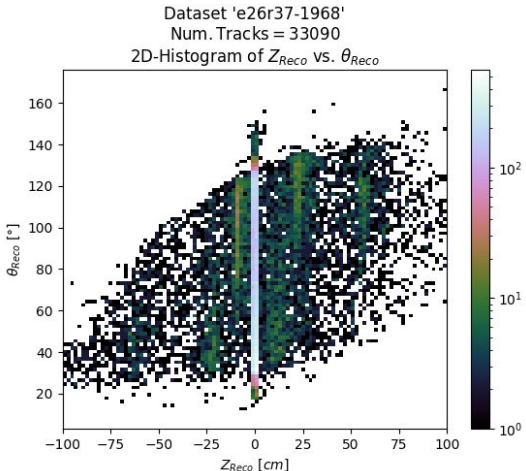
The change in the z distribution can also be seen in the 2D plots. It is also worth mentioning, that the background from the beampipe crotch part got stronger than the QCS background in E26 compared to E20.

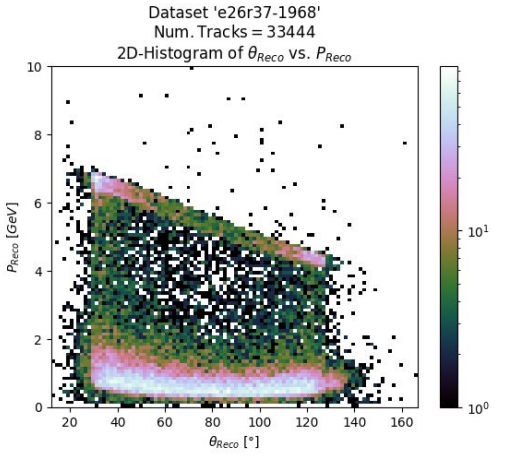








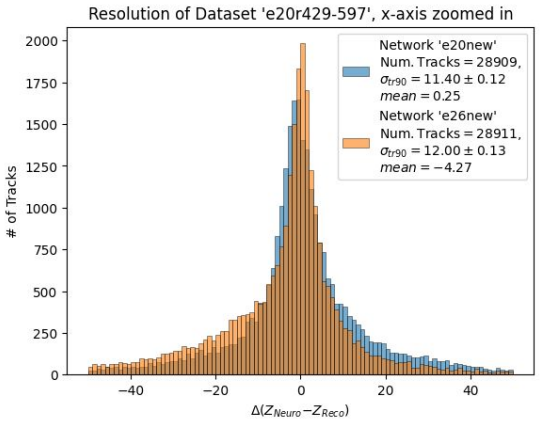


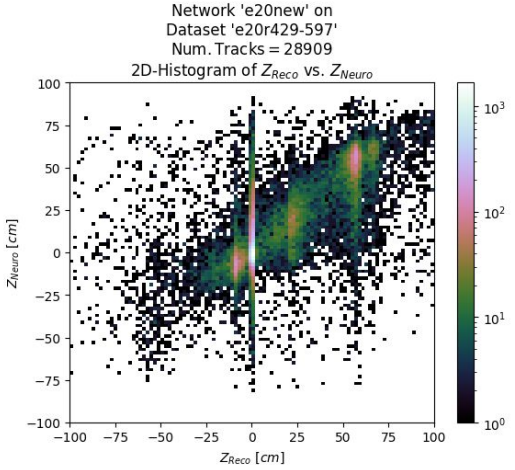


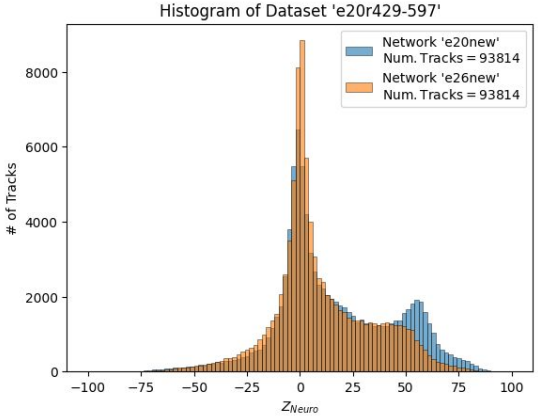
New E20 + E26 Networks

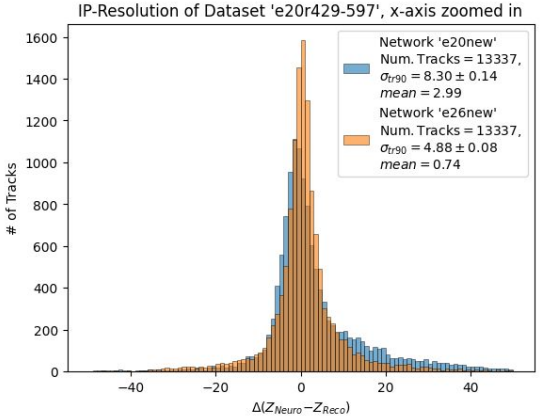
Test on E20: Default

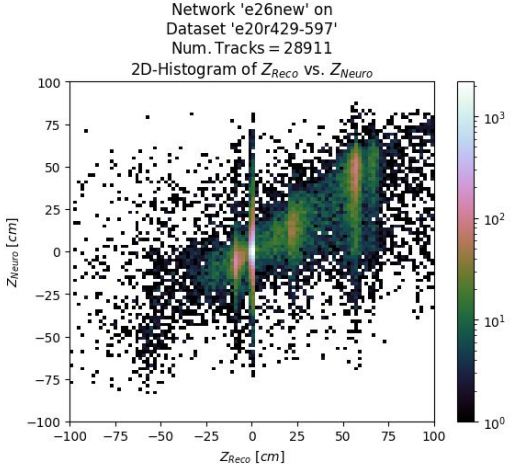
The new network trained on E26 has a much improved resolution at the IP and the upfeed problem got better, but it has some downfeed problems again because of a different training data distribution.







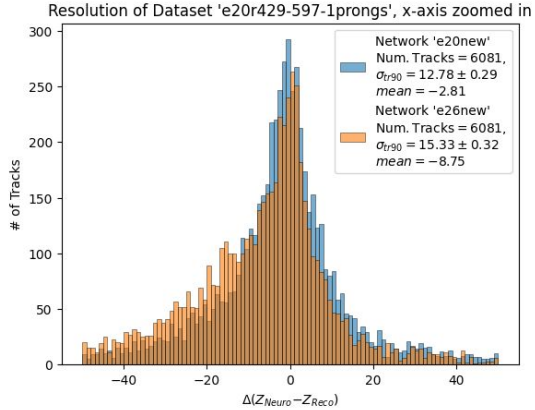


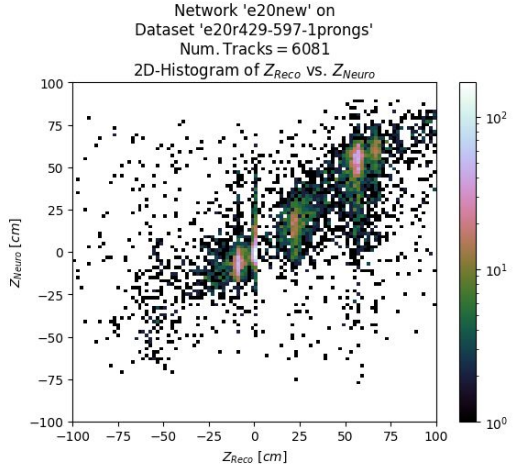


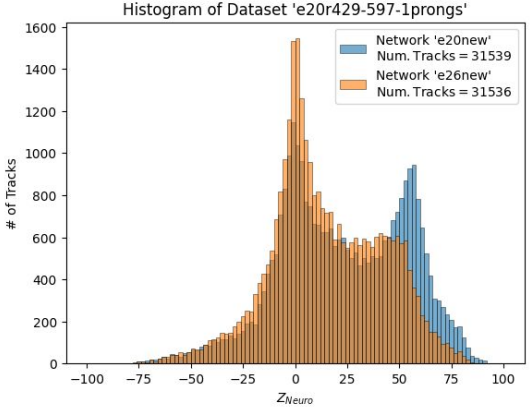
New E20 + E26 Networks

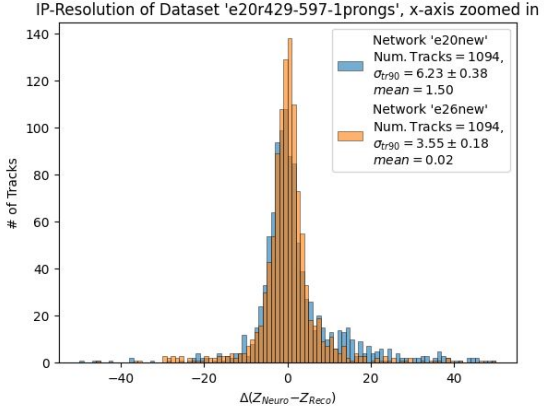
Test on E20: Default 1reco

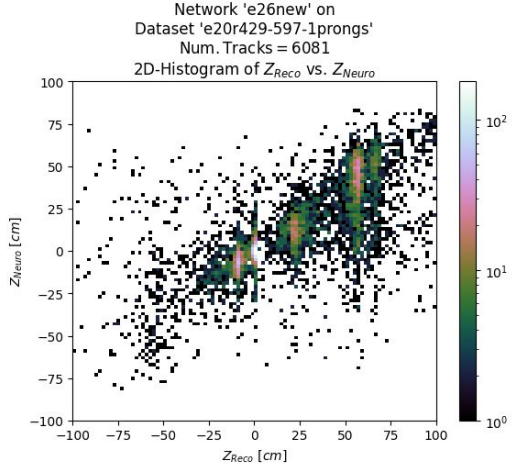
For 1prongs the situation is very similar to the complete dataset, the IP resolution is improved a lot and the upfeed problem got better, while the downfeed problem has worsened.







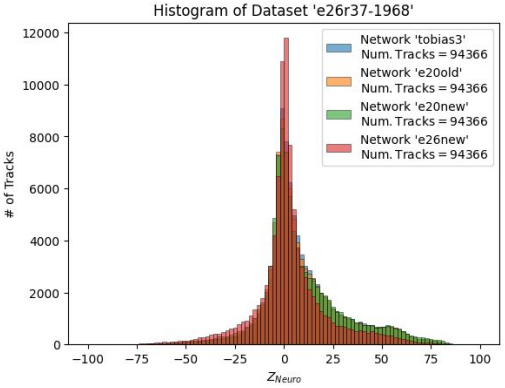


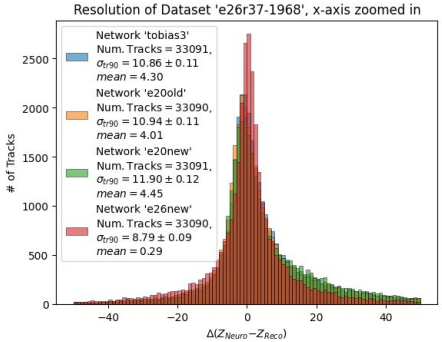


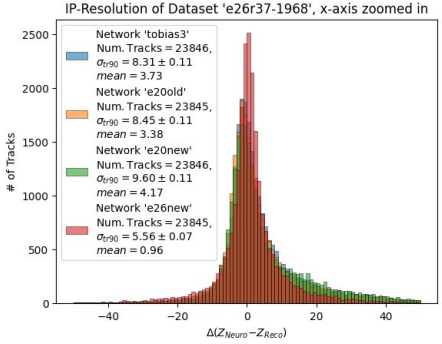
New E20 + E26 Networks

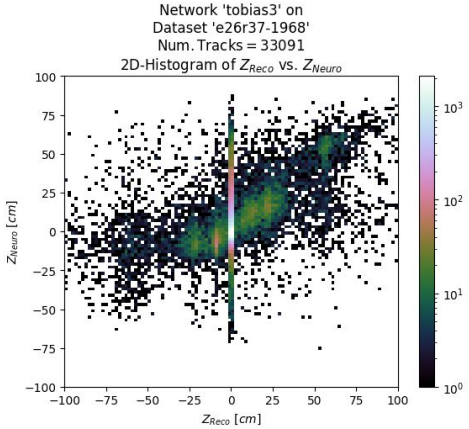
Test on E26: Default

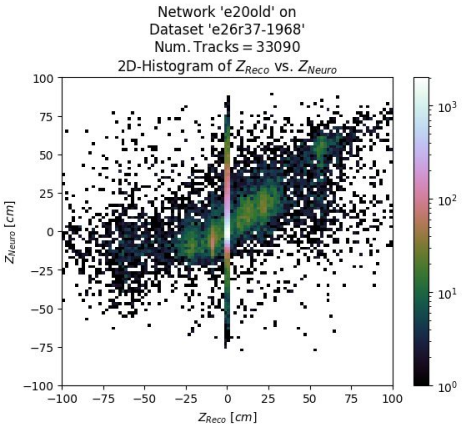
In the E26 dataset are much less background tracks coming from the positive z axis, but more coming from the negative QCS region. Although the old networks have a little bit better performance regarding the downfeed, the negative z vertices are much more important for the resolution overall.

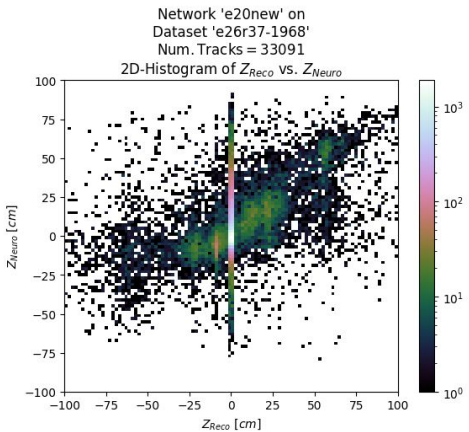


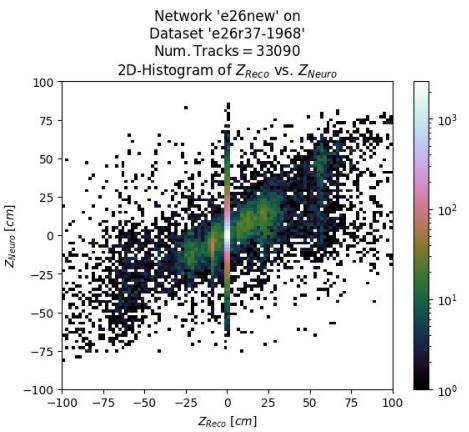








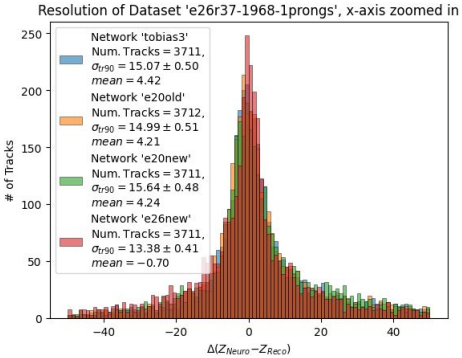


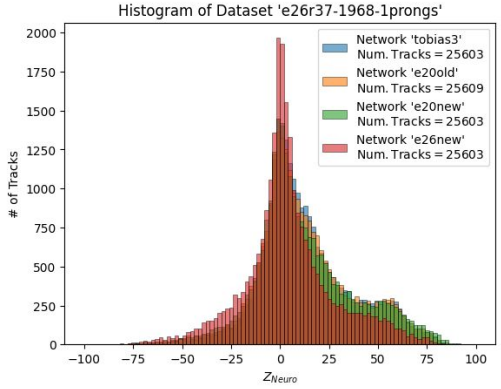


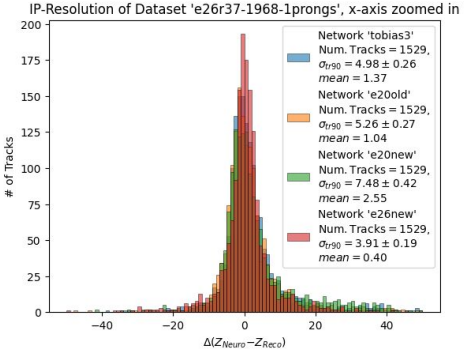
New E20 + E26 Networks

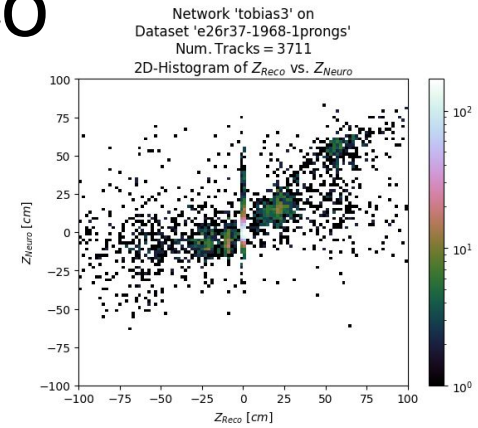
Test on E26: Default 1reco

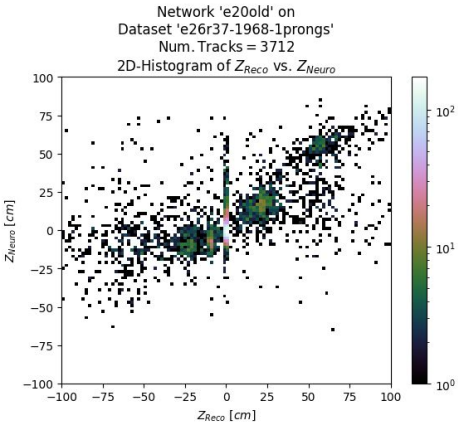
For the 1prongs the new E26-trained network has the best performance. The downfeed problem is now similar to the E20 networks, but the upfeed is a lot better. The efficiency for the IP-region is better, because very few tracks get a high neuroz. Also the mean is close to 0, in contrary to the E20 networks.

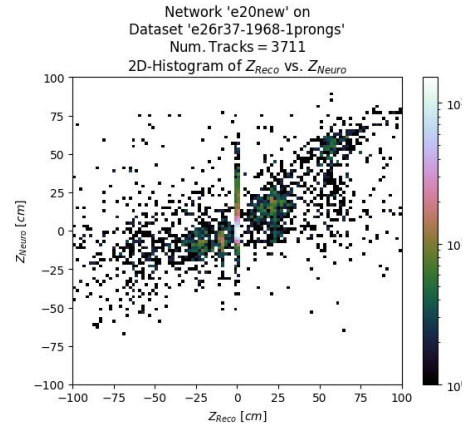


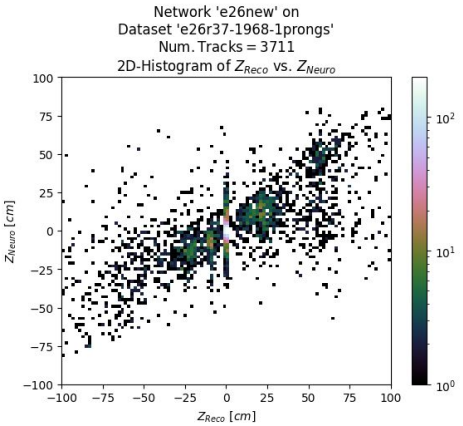












Conclusions

- The new training and software are now under control
- The new training on e26 data promises a huge improvement of the IP resolution!