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# Daya Bay data exploration

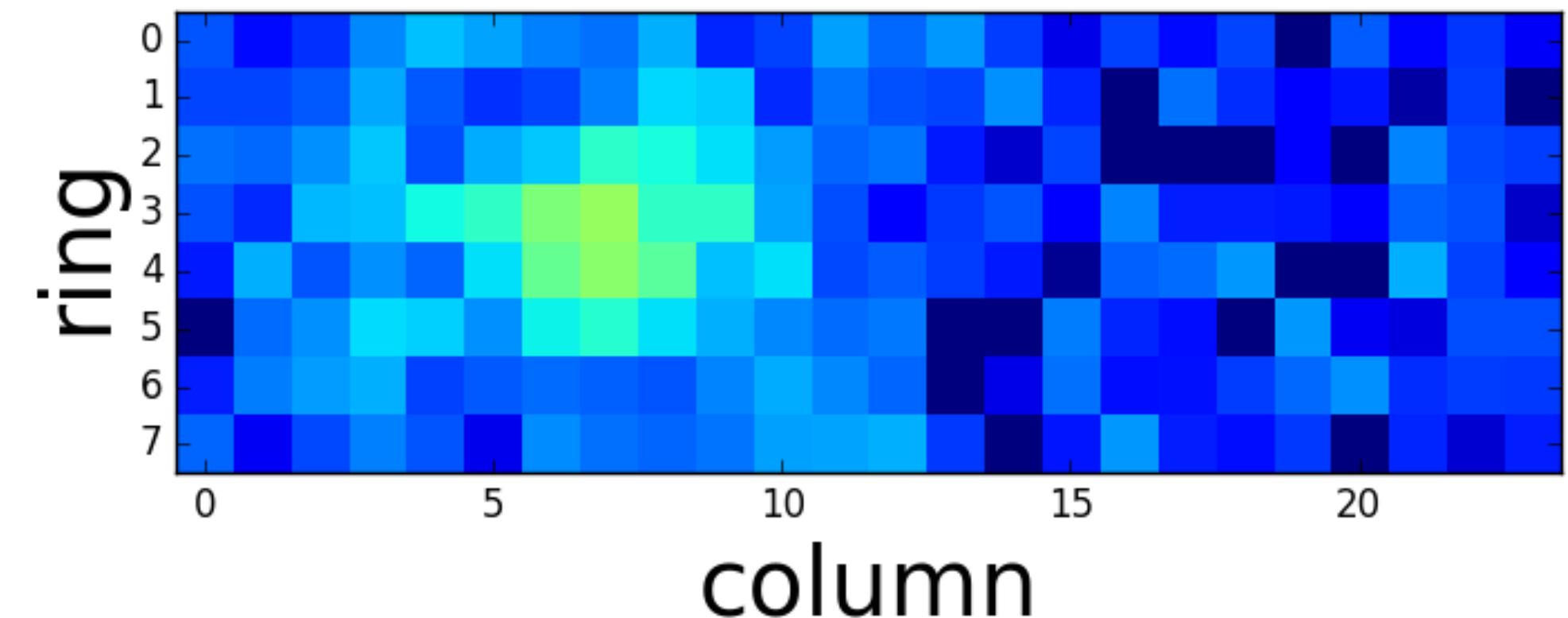
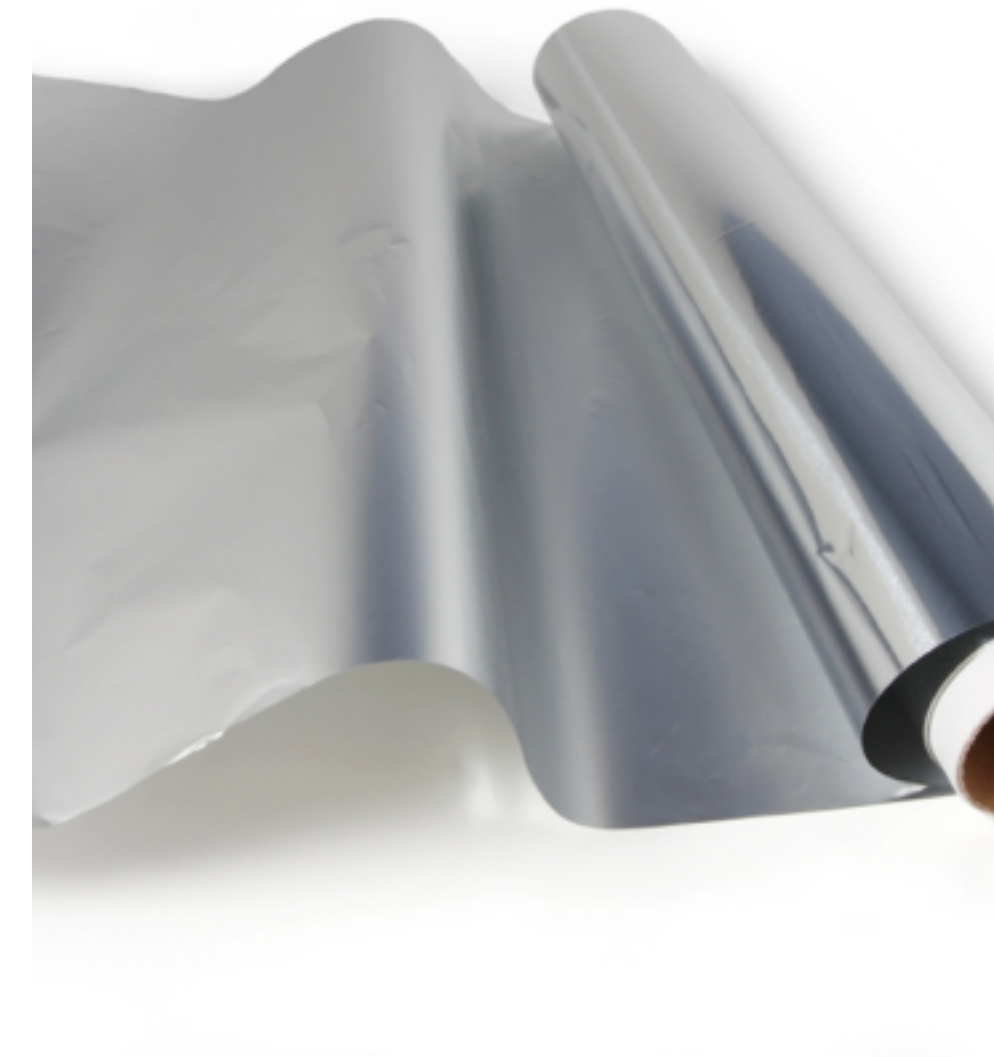
“Unroll” cylindrical antineutrino detector into  $8 \times 24$  pixel map of PMT charges and hit times for each detector trigger

What information is contained in the PMT hitmaps?

- distinction between IBDs and accidentals?

What features allow us to make these distinctions?

Use unsupervised neural net to encode each image based on learned patterns and features



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# t-SNE plot: color-coded

5120 data points shown

Each point represents the neural net's encoding of one IBD or accidental event

Nearby points on this plot have similar encodings

Color represents which data set the point belongs to (IBD or accidental)

NN *was not* given this information!

Separation of red and blue indicates *neural net discovered different features* for IBD and accidentals events

