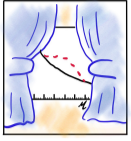


Draw the Curtains

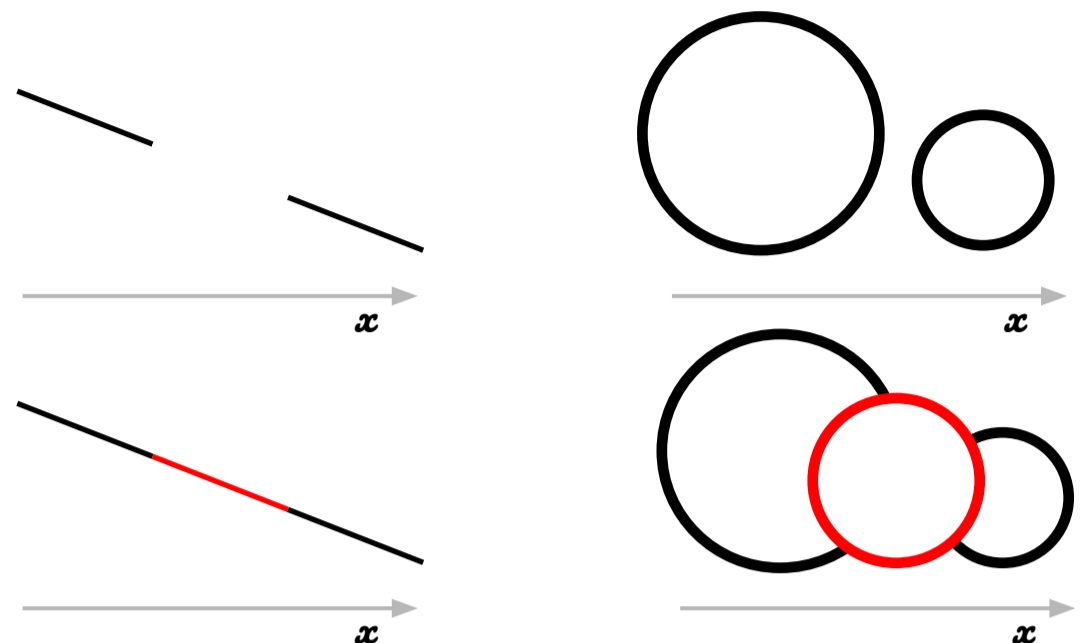
Constructing Unobserved Regions by Transforming Adjacent Intervals

- Data Science Day -



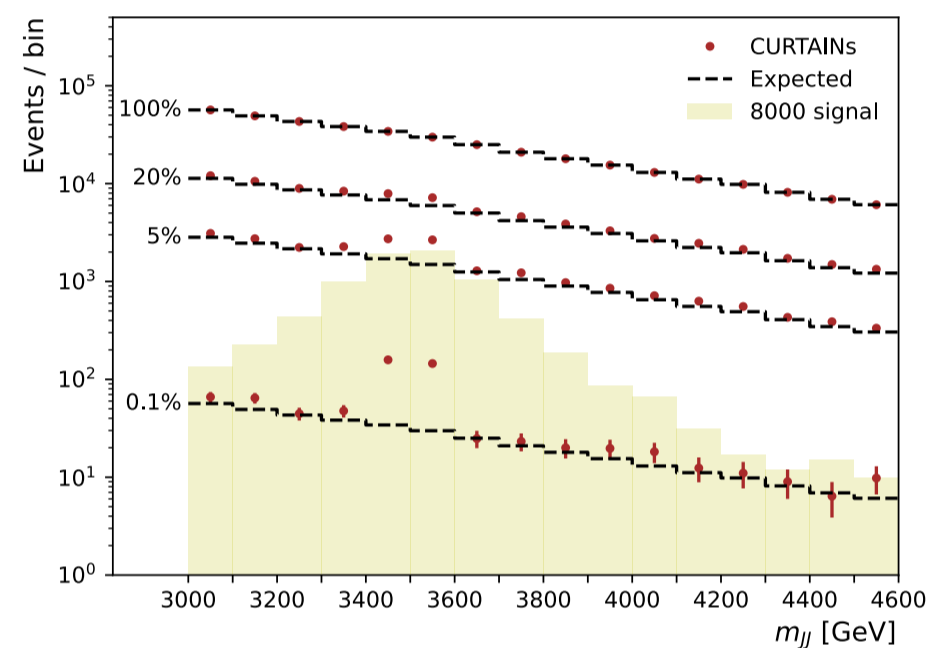
Interpolation

- Given a line with a gap we can 'fill in the blank'
- The same is true for simple shapes like circles
- How can we use this intuition to define anomalies?



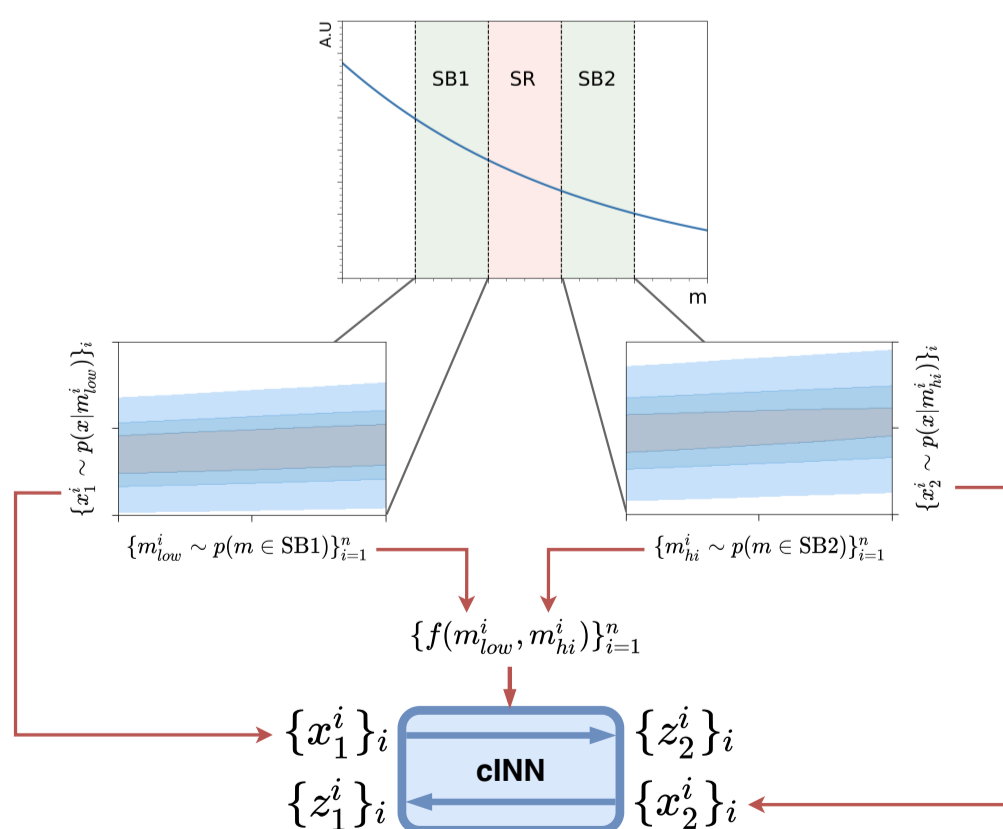
Bump Hunts

- Need background estimate in the Signal Region (SR).
- Extrapolate from the sidebands (SB).
- Look for a bump!
- Need additional observables to increase sensitivity.
- **How to extend interpolation?**



Method

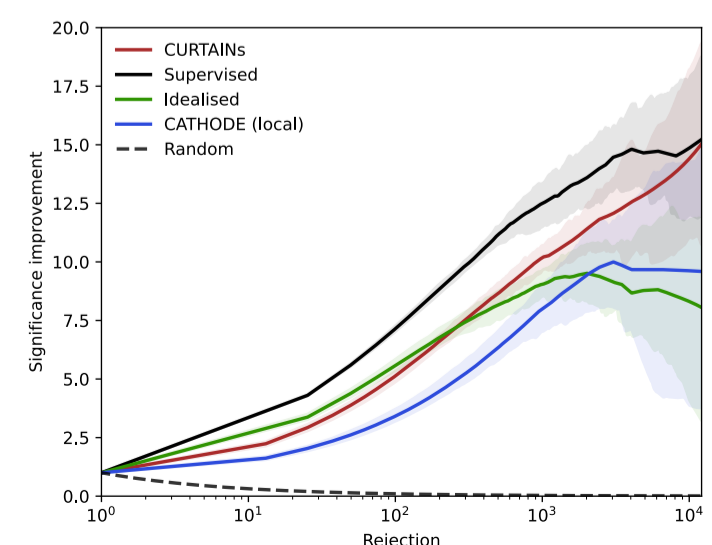
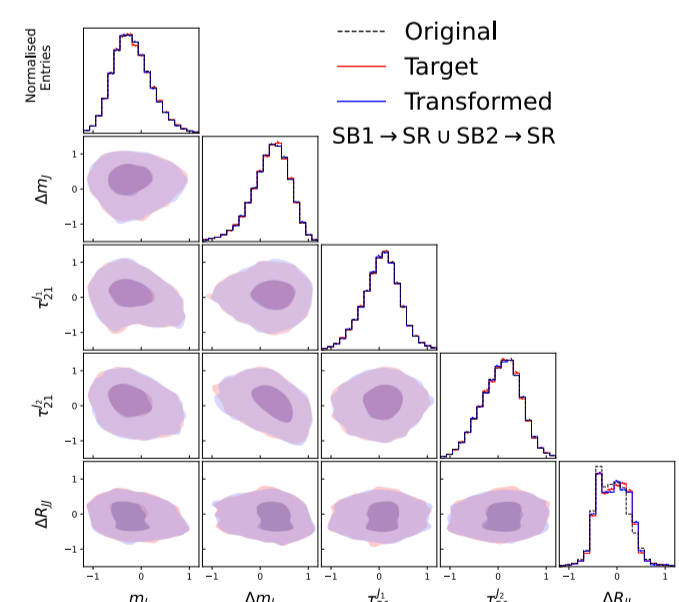
- **Transform** data from the sidebands into the signal region.
- Transformed sidebands provide a background template.
- Train a classifier to separate signal region samples from background template.
- Training on mixtures of samples results in the optimal classifier.



Results

Transformed samples from both sidebands are **indistinguishable** from signal region samples.

We can **interpolate**!



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Johnny Raine, Samuel Klein,
Debajyoti Sengupta, Tobias Golling, 15.09.2022