Leaderboard probing

- Types of LB probing

- Categories tightly connected with 'id' are vulnerable to LB probing
    - Company of user in RedHat competition
    - Year, Month, Week in WestNile competition

Leaderboard probing

id	...	y
1	...	0
1	...	0
1	...	0
2	...	1
2	...	1
2	...	1

Private
Public

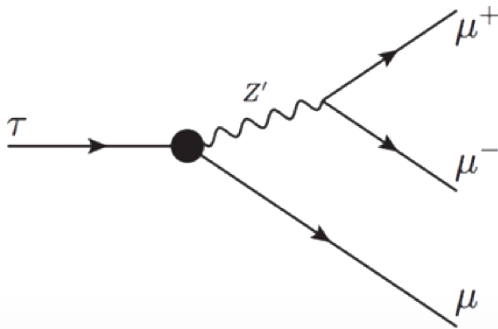# Leaderboard probing

Adapting global mean via LB probing:

$$-L * N = \sum_{i=1}^{N} (y_i \ln C + (1 - y_i) \ln (1 - C))$$

$$-L * N = N_1 \ln C + (N - N_1) \ln (1 - C))$$

$$\frac{N_1}{N} = \frac{-L - \ln (1 - C)}{\ln C - \ln (1 - C)}$$

Peculiar examples

Truly Native

- Predict whether the content in an HTML file is sponsored or not

- Data leak in archive dates. But is it all?

  - Data collection

  - Date proxies

Expedia

- Predict hotel group a user is going to book

- Data leak in distance feature

- Reverse engineering true coordinates

Flavours of physics

- Machine learning problem for something that has never been observed

- Signal events were simulated

- Special statistical tests in order to punish the models that exploit simulation flaws

- However, one could by-pass the tests, fully exploit simulation flaws and get a perfect score on the leaderboard
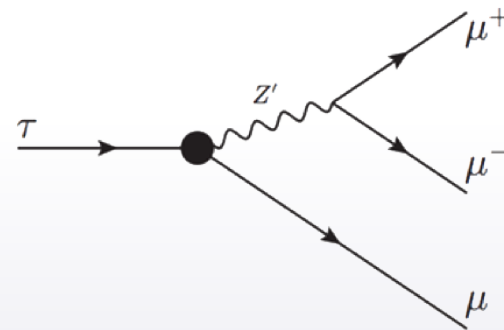
Pairwise tasks

- Data leakage in item frequencies

- Similarities from connectivity matrix

$$\begin{pmatrix} 1 & 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \end{pmatrix}$$

Q

Endcard