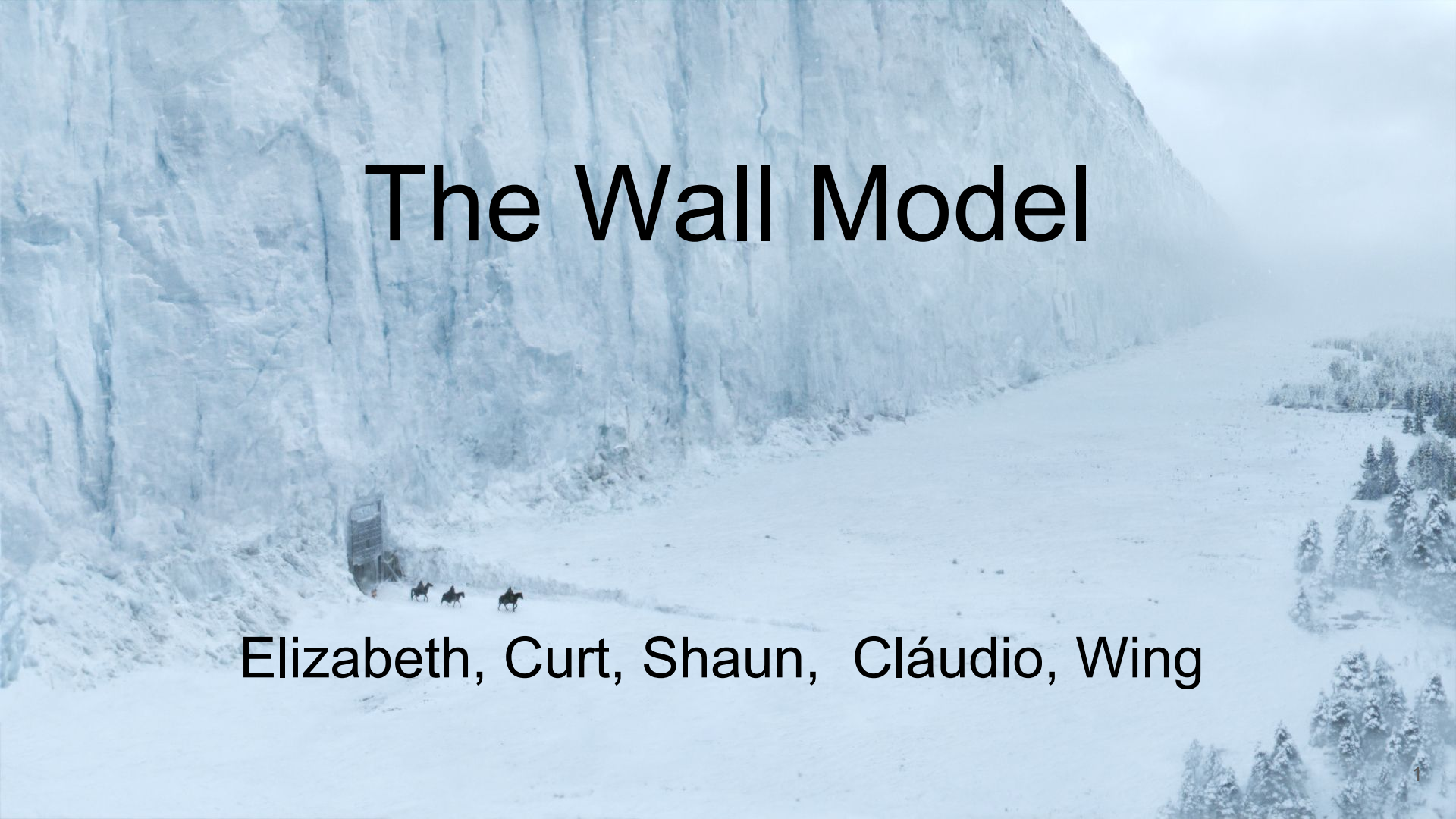


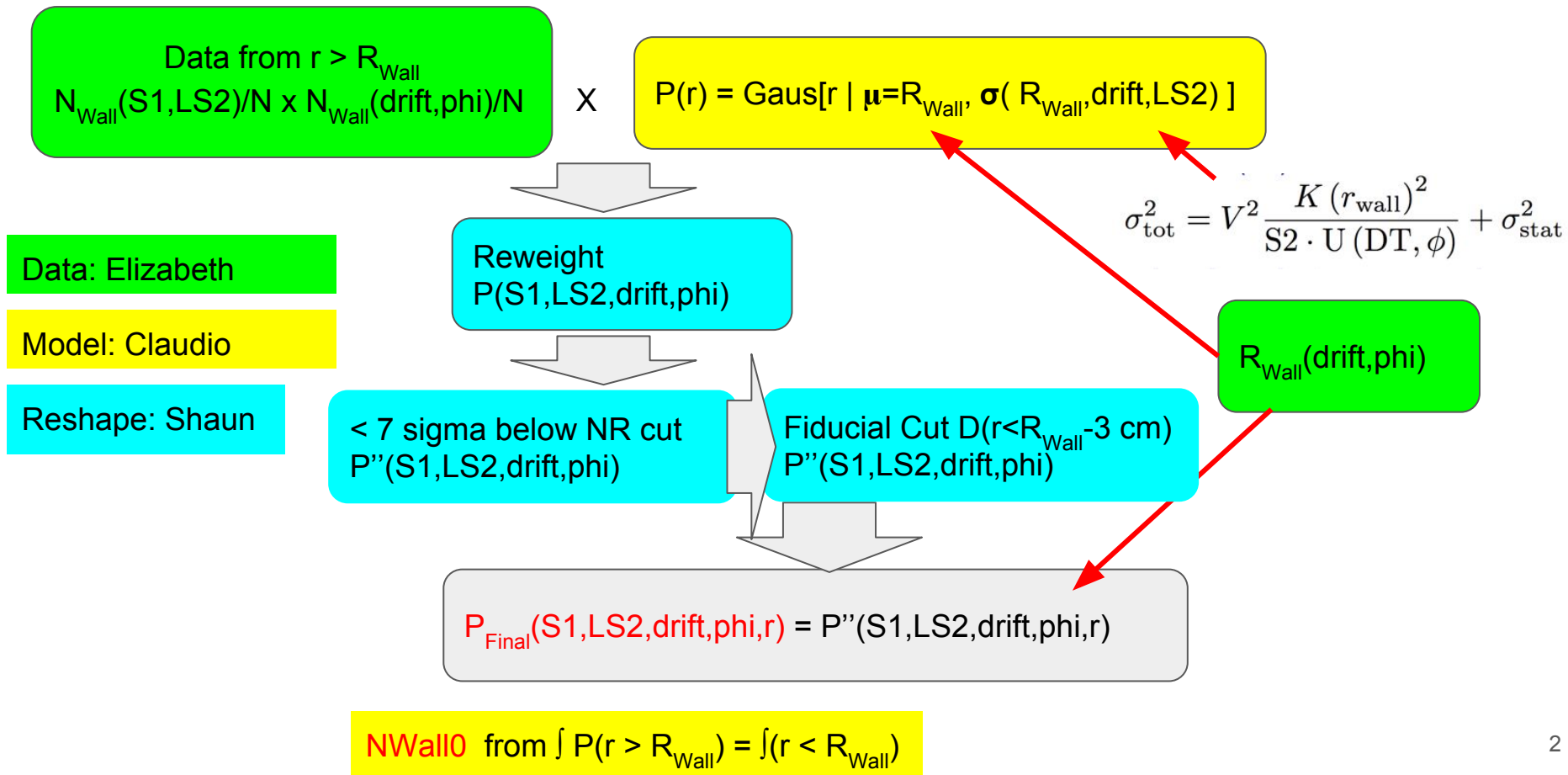
The Wall Model



Elizabeth, Curt, Shaun, Cláudio, Wing

Wall Model implementation in the PLR

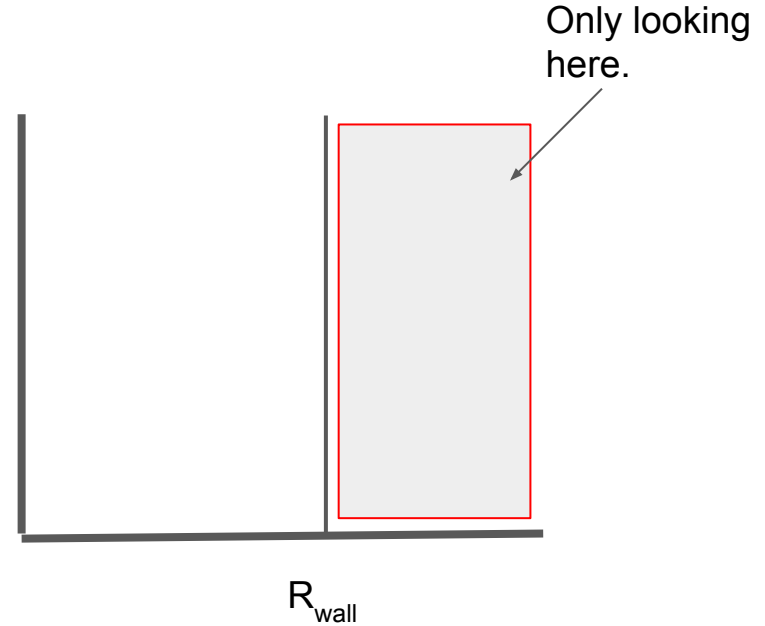
$\mu\sigma$



Reweighting of the pdf

The data for the wall model is taken only from events with position reconstructed at $r > R_{\text{wall}}$ (outside the detector).

Unfortunately, $P(S_2)$, $P(\text{drift})$, and $P(\phi)$ are not independent of the radial coordinate, so this creates a bias.



Reweighting pdf continued

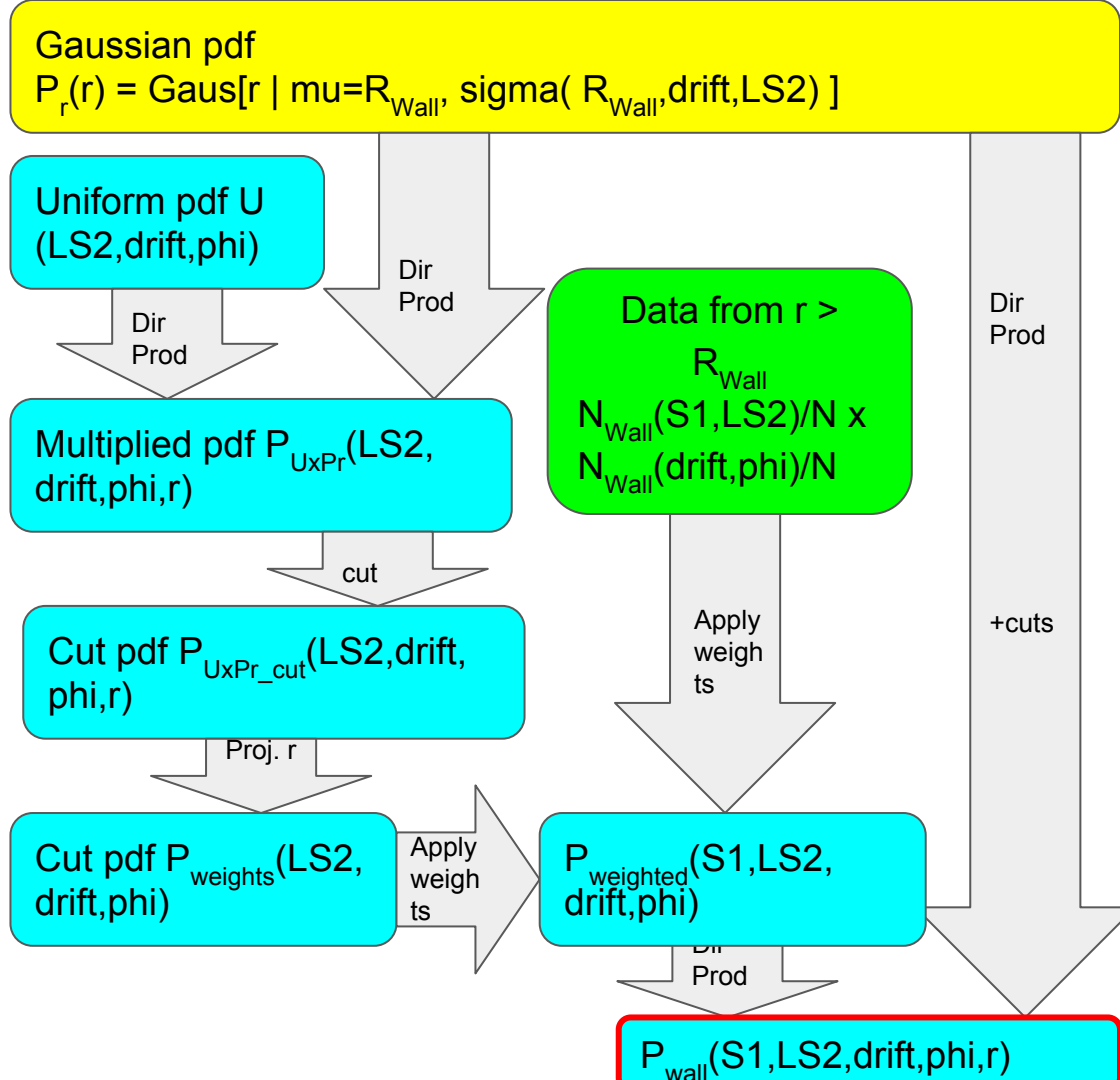
Correct this bias by creating a uniform pdf in LS2,drift,phi, $P(\text{LS2,drift,phi})$, then multiplying this by a conditional pdf in r $P(r|\text{LS2,drift,phi})$ (pdf that varies depending on LS2, drift, phi coordinates, NOT on $P(\text{LS2})$, $P(\text{drift})$, etc.)

This introduces the radial dependence on $P(\text{LS2,drift,phi},r)$. Cut only to keep $r > R_{\text{wall}}$

Integrate out the r dimension from the pdf.

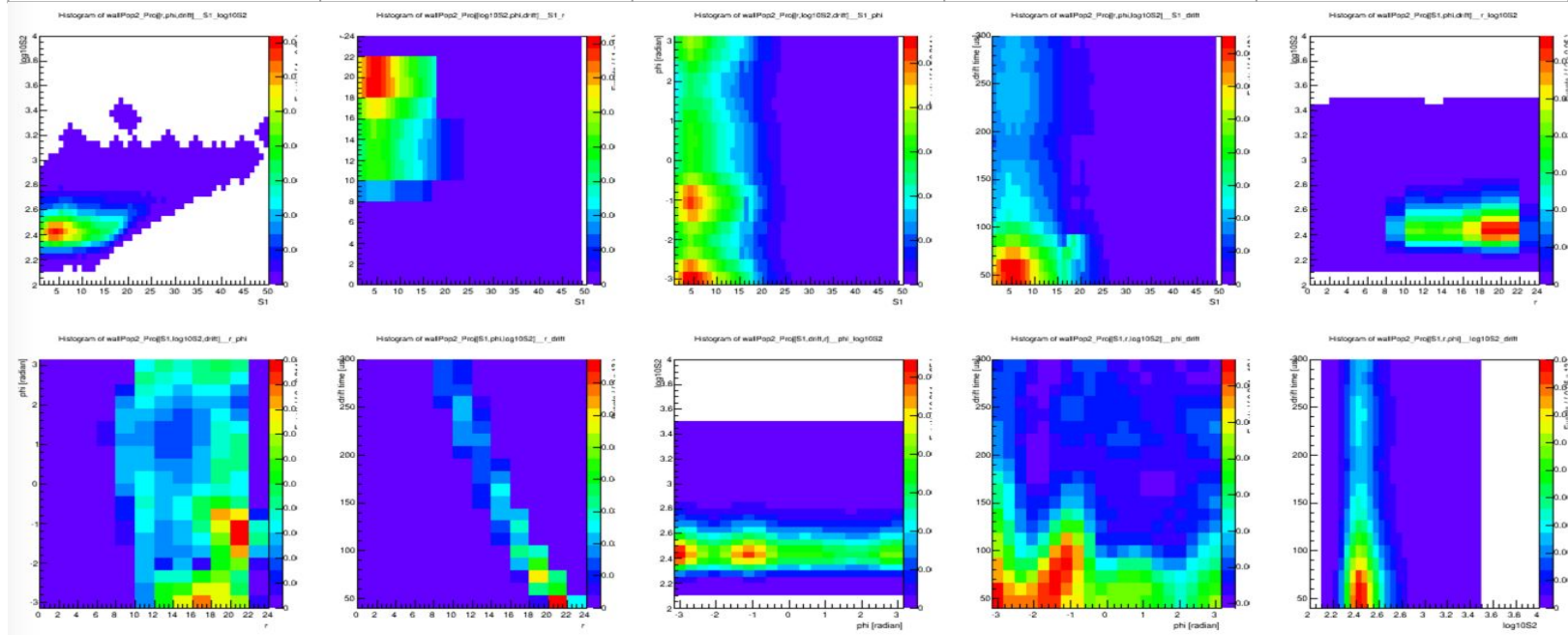
The result is a pdf $P_{\text{weights}}(\text{LS2,drift,phi})$ that replicates the bias attained from only smapling at $r > R_{\text{wall}}$

Divide the full $P(\text{S1,LS2,drift,phi})$ by P_{weights} at each value of LS2, drift, phi.



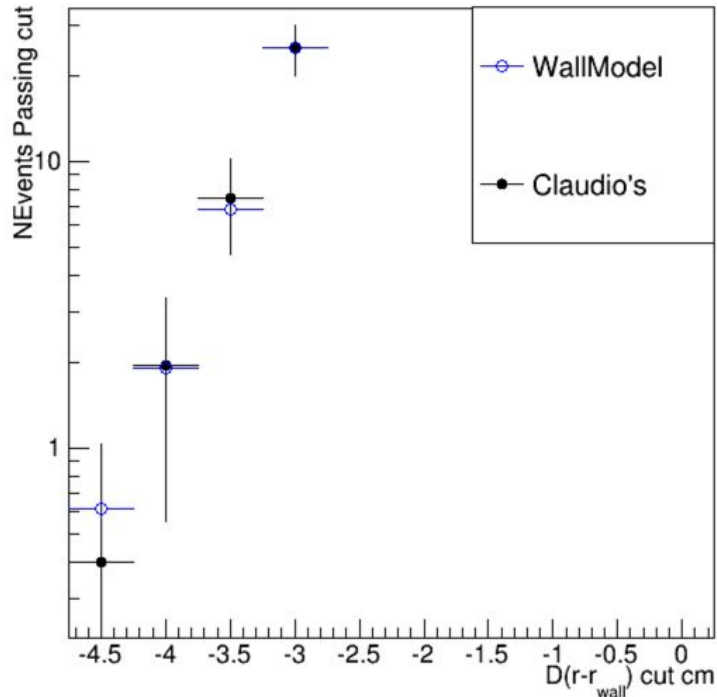
Wall Model Final Predictions and Projections

	N Wall Model	$\pm 1 \sigma$	N Claudio	N in Low NR
$D < -3.0$	13.63	5.45	13.63	0.90
$D < -3.5$	6.84	2.74	7.5	0.25
$D < -4.0$	1.90	0.76	1.96	0.07



Fiducialization and $\log_{10}S_2 > \text{NR-}7\sigma$

- $D < -3.0$ applied
- Full $\log_{10}S_2$ vs S_1 space
- Prediction Scaled to $D < -3.0$



- $\log_{10}S_2 > \text{NR-}7\sigma$ applied
- 3.6% of total in NR Lower Band
- NEvents in lower NR = 0.90

