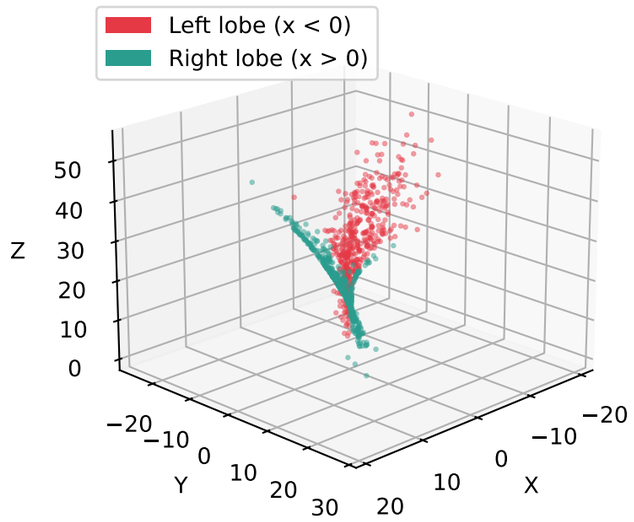
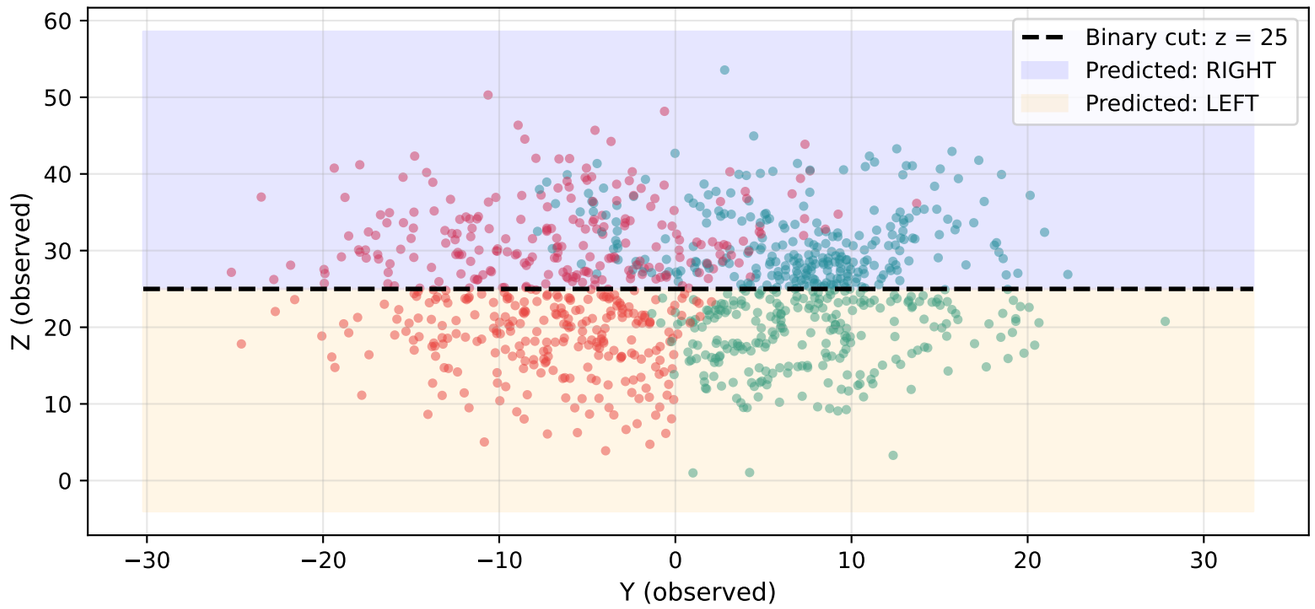
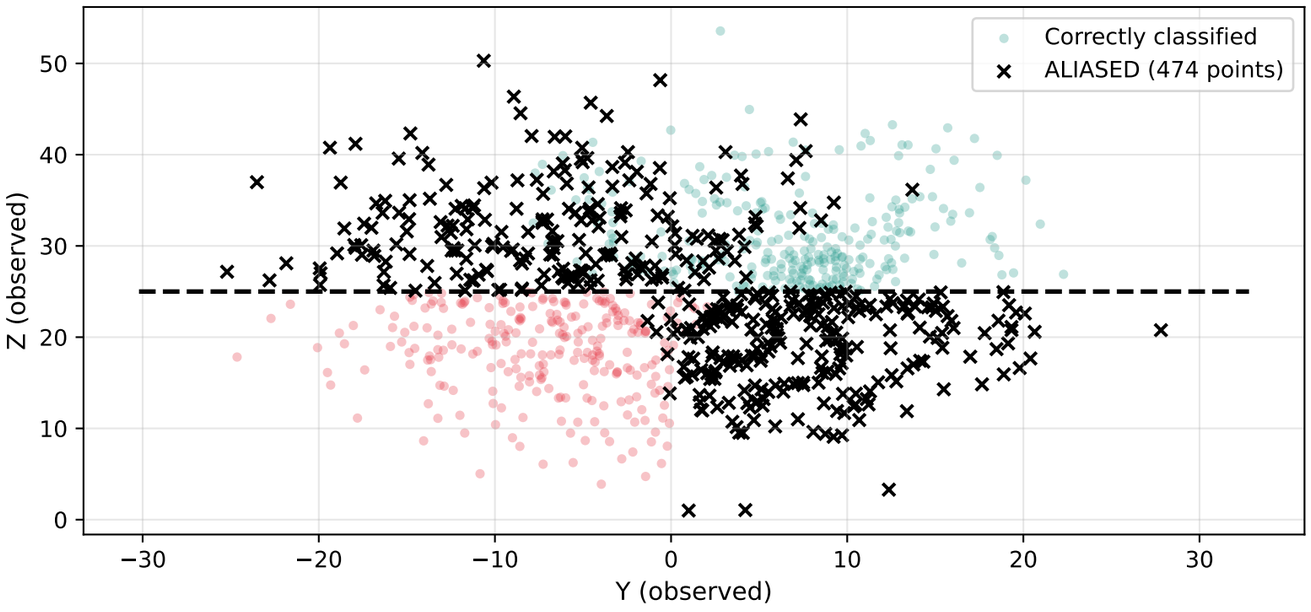
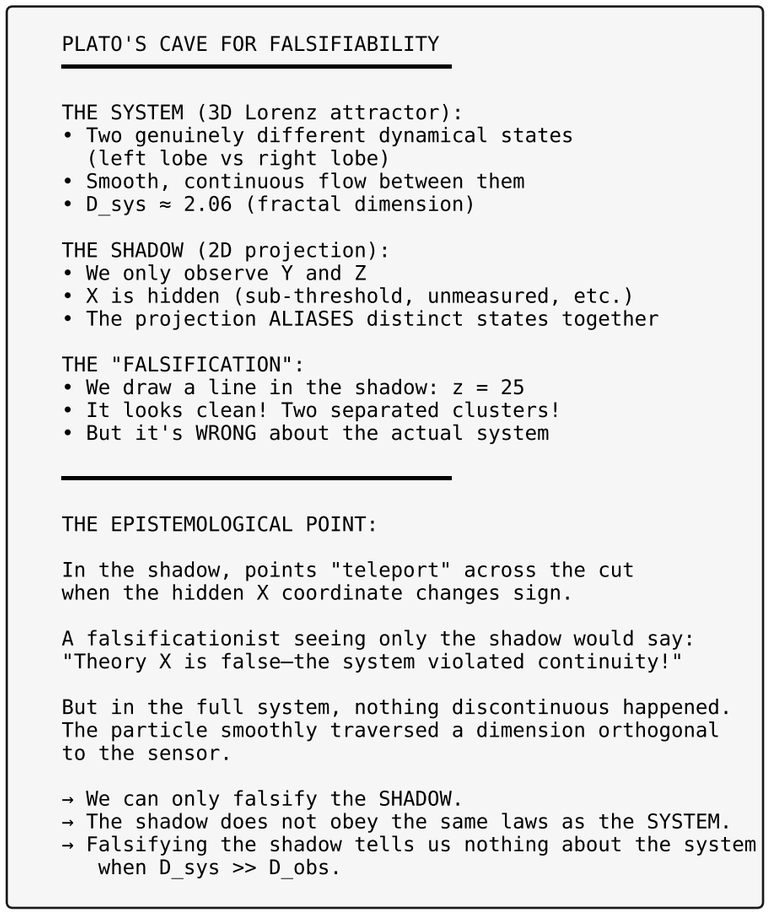

A. THE SYSTEM (3D Reality)
Colored by true dynamical state
Left lobe (x < 0)
Right lobe (x > 0)
Z
Y
X


B. THE SHADOW (2D Projection)
X dimension is hidden
Binary cut: z = 25
Predicted: RIGHT
Predicted: LEFT
Z (observed)
Y (observed)


C. THE ALIASING PROBLEM
474 states (47%) misclassified
Correctly classified
ALIASED (474 points)
Z (observed)
Y (observed)


D. The Ontological Point
PLATO'S CAVE FOR FALSIFIABILITY
THE SYSTEM (3D Lorenz attractor):
• Two genuinely different dynamical states
(left lobe vs right lobe)
• Smooth, continuous flow between them
• D_sys ≈ 2.06 (fractal dimension)
THE SHADOW (2D projection):
• We only observe Y and Z
• X is hidden (sub-threshold, unmeasured, etc.)
• The projection ALIASES distinct states together
THE "FALSIFICATION":
• We draw a line in the shadow: z = 25
• It looks clean! Two separated clusters!
• But it's WRONG about the actual system
THE EPISTEMOLOGICAL POINT:
In the shadow, points "teleport" across the cut
when the hidden X coordinate changes sign.
A falsificationist seeing only the shadow would say:
"Theory X is false—the system violated continuity!"
But in the full system, nothing discontinuous happened.
The particle smoothly traversed a dimension orthogonal
to the sensor.
→ We can only falsify the SHADOW.
→ The shadow does not obey the same laws as the SYSTEM.
→ Falsifying the shadow tells us nothing about the system
when D_sys >> D_obs.