Dimension-Dependent Non-Orientability Effect
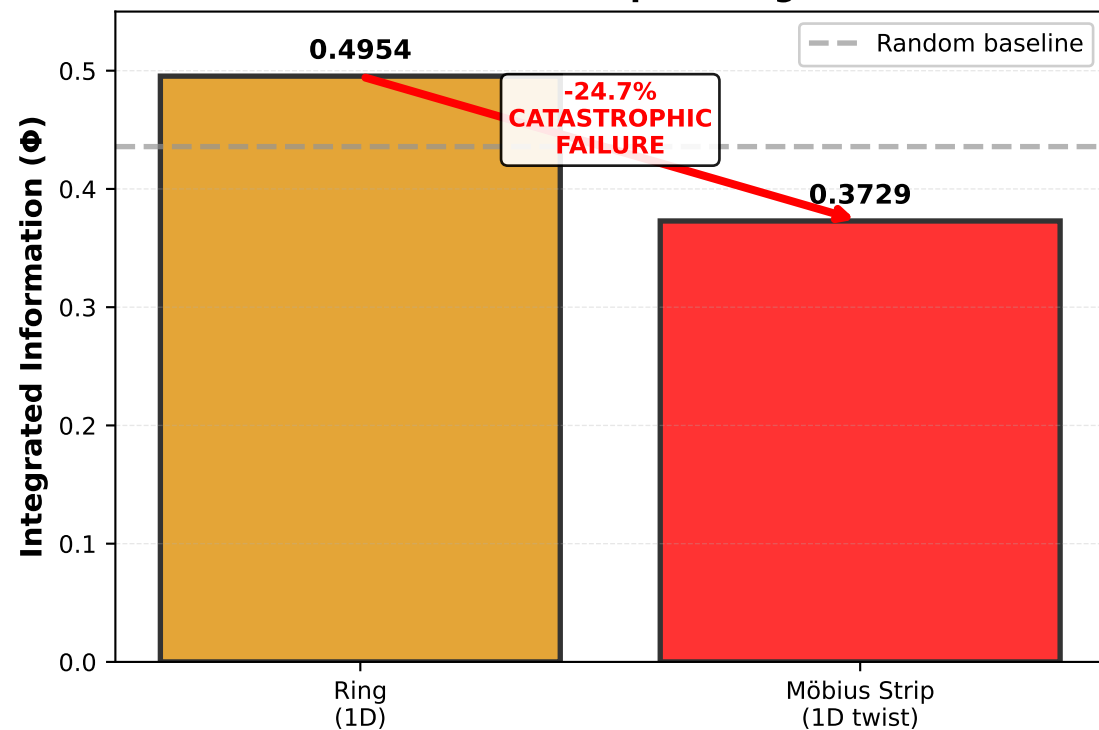**Local Uniformity > Global Orientability**

1D Non-Orientability Effect
Möbius Strip vs Ring

- Ring: 0.4954
- Möbius Strip (1D twist): 0.3729
- -24.7% CATASTROPHIC FAILURE
- Random baseline

y-axis: Integrated Information (Φ)

x-axis: Ring (1D), Möbius Strip (1D twist)

2D Non-Orientability Effect
Klein Bottle vs Torus

- Torus: 0.4953
- Klein Bottle (2D twist): 0.4940
- -0.26% MAINTAINS HIGH Φ
- Random baseline

y-axis: Integrated Information (Φ)

x-axis: Torus (2D), Klein Bottle (2D twist)