

Laws of Daugherty Dynamics

The First Law: Conservation of Gravimetric Mass

"The external gravitational footprint of a Fold-Space volume is equal to the sum of its internal mass, regardless of spatial expansion."

The Law: $M_{ext} = \sum m_{int}$

Explanation: While the *volume* is expanded, the *mass* is not "hidden" from the universe. If you move 500 tons of equipment into a 4-foot wide Daugherty Fold, the exterior structure will exert a gravitational pull equivalent to 500 tons.

Engineering Consequence: High-volume folds must be anchored to bedrock or orbital platforms to prevent the "Aperture" from sinking into the ground under the weight of its expanded interior.

The Second Law: Metric Inertia (The Velocity Constant)

"The perceived velocity of an object is inversely proportional to the local expansion factor during threshold transition."

The Law: $v_{perceived} = f(x)v_{actual}$

Explanation: As an object crosses the **Aperture** (b), it is moving from a "small" exterior to a "large" interior. To an outside observer, the object appears to slow down as it enters the fold, because it is covering a larger "internal" distance than is visible from the "external" frame.

Safety Protocol: Vehicles entering a fold must maintain a constant throttle to avoid a "stalling" effect at the threshold where the metric shifts.

The Third Law: The Φ -Gradient (Environmental Resistance)

"The Energy Requirement (P) for stable expansion is a function of local Spacetime Tension (Φ)."

The Law: $P \propto e^{\Phi}$

Explanation: Space is "stiffer" near massive objects. It is mathematically easier to create a massive Daugherty Fold in deep space (low Φ) than it is on the surface of a planet (high Φ).

Application: This law dictates that the largest "Infinite Cities" will likely be built in orbit or deep space to minimize the power load on the **Stability Shunts**.

The Fourth Law: Metric Reconciliation (The Snap-Back Rule)

"In the absence of a stabilizing energy density (D), the Fold-Space metric will reconcile with the Euclidean background at the local speed of light (c)."

The Law: $t_{collapse} = c \cdot A_{ext} \Delta V$

Explanation: Space "wants" to be flat. The moment the power (P) falls below the **Critical Threshold** (D_{crit}), the interior volume collapses.

The Danger: Because the collapse happens at nearly c , any matter inside that cannot fit through the aperture is subject to **Molecular Fusion**—the atoms are literally forced into the same space at once.

The Fifth Law: The Law of Information Entrainment

"Signals crossing a Fold-Field threshold are subject to Blue-Shift or Red-Shift relative to the expansion factor."

The Law: $\lambda_{obs} = \lambda_{src} \cdot (1 + \ln(P) - \Phi)$

Explanation: Light and radio waves must "stretch" to fill the expanded interior.

Communication Note: Wireless signals sent from inside a fold to the outside world will arrive "Compressed" (higher frequency), requiring a **Daugherty Signal Decryptor** to normalize the data for Euclidean receivers.

Summary of the Daugherty Framework

Law	Primary Focus	Practical Effect
1st Law	Mass	Folded rooms are heavy.
2nd Law	Motion	Entrance looks "slow."
3rd Law	Energy	Harder to fold near gravity.
4th Law	Failure	Instant collapse if power fails.
5th Law	Light	Radio signals need frequency tuning.
