

The Corner Theorem

A Plain English Guide to the Only Thing in This Exhibition That Is Proved

Not CF CONSISTENT. Not conjectured. Proved.

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The Most Important Distinction in This Exhibition

Every other document in this exhibition uses the phrase CF CONSISTENT not PASS. It means: the framework is consistent with what we know, but we are not claiming proof.

The Corner Theorem is different. It is proved. Not observed. Not conjectured. Not 'consistent with the data'. Proved, in the strict mathematical sense — both directions, confirmed by Kimi in March 2026.

This matters because the Corner Theorem is the geometric foundation of almost everything else in the exhibition. Saturn's hexagon, the Needle's Eye attractor, the Trojan Horse argument — all of them rest on the Corner Theorem. And the Corner Theorem rests on nothing except one fact about fluids that nobody disputes: fluids cannot change their own volume.

The One Rule

Every incompressible fluid — water, air, Saturn's atmosphere, blood, plasma in a fusion reactor — obeys one inviolable rule: it cannot change its own volume.

This sounds obvious. It has an enormous consequence. When a fluid deforms — stretches, compresses, twists — the deformation is described by three numbers called eigenvalues. The no-volume-change rule forces these three numbers to always sum to exactly zero. If you stretch in one direction, you must compress in the others to compensate. Always. Exactly.

This one constraint turns out to force the geometry of the most extreme deformation configurations into a specific shape. The question is: what shape?

The Hexagon That Was Always There

The Corner Theorem says: six corners. Exactly six. Always.

Not because six is a special number. Not because anyone designed it that way. Because when you impose the constraint that the three deformation rates sum to zero, the full three-dimensional symmetry of space collapses. The symmetry group reduces. What remains is a hexagon.

Six corners. For every incompressible fluid. In every domain. At every scale. From a water molecule to Saturn's atmosphere.

The Bulb Intersection Structure

The Tresca hexagon is not a single object. It is the intersection of two equilateral triangles — the positive bulb (tension-dominated, cyclonic) and the negative bulb (compression-dominated, anticyclonic). Each bulb is independently selected by maximum

plastic dissipation. Each forms an equilateral triangle. D_6 symmetry requires them to be equal-sized and rotated 60° relative to each other. Their intersection is the regular hexagon — the Tresca surface — uniquely.

This was the key insight that closed the only-if direction: the hexagon is two triangles in intersection, not one object.

Why This Isn't Just a Curiosity

The six corners are the preferred directions that the spinning part of the fluid — the vorticity — tries to align with. In turbulent flow, the vorticity is constantly being stretched and twisted. At each moment, it tends toward one of the six corner directions because those are the geometrically available extremes.

This is the Trojan Horse: the hexagonal geometry is not something that develops over time. It is already inside every qualifying fluid from the first moment. The turbulence activates it, but it was always there, latent in the equations.

Before March 2026, the hexagonal geometry of turbulent flow was a computational observation. After March 2026, it is a proved theorem.

Saturn Again

Saturn's north pole has a hexagon. The Corner Theorem says this is not a coincidence. Saturn's polar atmosphere is a rotating, three-dimensional, incompressible fluid. The Corner Theorem applies.

There is a gap between the proved theorem and the visible hexagon: the theorem works in the mathematical space of deformation rates, not in physical space. So the Saturn prediction is still CF CONSISTENT, not proved. But the proved part is: the six corners exist in eigenvalue space for Saturn's atmosphere, because they exist for every incompressible fluid.

"The Corner Theorem does not negotiate. Incompressibility does not make exceptions for gas giants."

Art Until Proven Otherwise.