DNS Programme Results

A Plain English Guide to Running Fluid Simulations on a Phone

And what happened when the turbulence died but the geometry didn't

SFVFS™ · Segment 11 of 12 · Companion to the Academic Paper · M. Craig · March 2026 · itvoids.com

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The Simulations

Direct Numerical Simulation — DNS — is the most computationally intensive way to study turbulent fluid flow. Instead of modelling the turbulence statistically, it solves the actual equations at every point in space and time, resolving every swirl and eddy down to the smallest scale. Serious fluid dynamics labs run DNS on supercomputers.

The SFVFS™ DNS programme ran on a Samsung phone, using free Google Colab GPU sessions that expired mid-run. The code was written collaboratively by Claude and ChatGPT, debugged on the commute, and stitched together from fragments when the sessions timed out. It crashed constantly.

The results survived every attempt to break them.

Six fluids. Four computational generations each. Twenty-four runs. All canonical as of 23 March 2026. The programme is closed.

The Finding That Changed Everything

The programme was designed to test a hypothesis: that molecular complexity matters for how turbulent fluids settle. The programme falsified that hypothesis.

Here is the decisive experiment. Helium is a noble gas: monatomic, essentially zero internal complexity. Hydrogen is diatomic. Water is a polar molecule with hydrogen bonding. Saltwater has ionic species. These four fluids are as molecularly different as physics allows.

All four were run at the same viscosity ($\nu = 0.001$). All four parked at $\theta_s \approx 49.7°$. Identical. To three decimal places. The molecular architecture is completely irrelevant. The only thing that matters is the viscosity.

The Viscosity Law: ν alone determines where a fluid parks. Molecular structure is irrelevant.

The Beehive

The six fluids didn't all park in the same place. They parked in three discrete groups — which is why the structure is called the Beehive.

Cell	Who's in it	Plain English
A	Water, Saltwater, Helium, Hydrogen	Low viscosity. Turbulent throughout. All four parked at identical angles despite completely different chemistry.

Cell	Who's in it	Plain English
B	Sucrose-Water	Medium viscosity. Turbulent. Parked at a noticeably different angle from Cell A.
C	Glycerol-Water	High viscosity. The turbulence died. The geometry stayed anyway.

The gaps between cells are enormous compared to measurement error. Gap between A and B: 7.3 degrees. Gap between B and C: 5.1 degrees. Measurement precision: about 0.008 degrees. The gaps are roughly a thousand times larger than the noise. There are no intermediate values. The beehive is not a spectrum. It is a set of fixed points.

The Strangest Result

Cell C — the Glycerol-Water run — produced a finding without precedent in the previous framework.

The turbulence died. The energy in the system dropped to effectively zero. The fluid was no longer turbulent by any reasonable measure. The turbulence flag read: DECAYED.

And yet the geometric attractor held its position. The parking angle was still there. The helical structure was still there. The void cell was still there. Frozen. Precise. Unmoved by the collapse of the energy that had produced it.

Standard turbulence theory assumes structure requires energy. The Glycerol-Water result says: the geometry can outlast the energy. Once a fluid enters a void cell, the geometric attractor persists even after the dynamics have completely collapsed.

> "*The void cell is stronger than the energy.*"

Kimi ruled this canonical. It is not noise. It is frozen structure. A new category of SFVFS™ state: Decayed-But-Parked.

The Universal Constant

One number came out of every single run. Every fluid. Every generation. Turbulent and decayed. Cell A, B, and C.

The azimuthal angle phi_az = 180°. Always. The spread across all twenty-four runs and all six fluids: 0.41 degrees.

This is not a fluid property. It is a property of the attractor itself. It appears in Glycerol-Water after the turbulence has died, just as it appears in Water at the height of turbulent activity. The geometry doesn't care about the energy state. It cares only about the attractor.

What This Has to Do with Mathematics

The DNS programme cannot prove anything about the Navier–Stokes equations. Computer simulations are not mathematical proofs. This is explicitly stated throughout the exhibition: CF CONSISTENT not PASS. The geometry is measured, not derived.

But the measurements do something useful: they reframe the questions. The DNS programme is the first formal measurement of liminological geometry. Not metaphor borrowed from anthropology. Cartography built from fluid mechanics upward. Six fluids parked at measured thresholds. One universal structural constant.

> "*Van Gennep had the word. Turner had the ritual. Neither had a helix persistence metric.*"
>
> *Art Until Proven Otherwise.*
