TECHNICAL NOTE / ADDENDUM v2.41-C
Limit Value Analysis for the Phase Transition of Black Holes

Abstract: This technical note provides a formal limit value analysis governing the hydrodynamic phase transition thresholds of black holes within a structured lattice framework. Document prepared for open-access repository distribution.

1. The Planck Volume Flux (Q_max) as the Hydraulic Collapse Threshold

When the volumetric flow rate per unit area reaches the critical boundary across a Planck area (l_P^2), an acute hydrodynamic blockage (a cosmic water hammer) occurs because the superfluid cannot propagate faster than the internal wave velocity of the lattice (c_{max} = 195,860,000 m/s). The maximum volume flux is defined as:

$$Q_{max} = l_P^2 \cdot c_{max} = 5.1237318042459 \times 10^{-62}\ m^3/s$$

When the intake demand reaches Q_{max}, the boundary between the elastic 3D lattice and the particle channels ruptures. All internal material torsional solid resistance ($\sigma_{torsion}$) and turbulence are erased. The region transitions into a state of **pure laminar super-inflow (Black Hole Mode)**, where the medium and the lattice are drawn frictionlessly and linearly directly down into the 4D substrate (0 Pa).

2. The Nuclear Venturi Collapse and the Compressive Force (F_strong)

At the exact instant the cavity collapse occurs, the internal static pressure within the common channel collapses to precisely 0 Pa ($P_{Venturi} = P_0$). The surrounding baseline pressure P_0 compresses the particles across the cross-section of the common channel ($A_{common} \approx 2.8637 \times 10^{-26}$ m^2):

$$F_{strong} = P_0 \cdot A_{common} = 25{,}013.51\ N$$

This demonstrates that the traditional 'strong nuclear force' is a purely macroscopic cosmostatic pushing force driven by the background medium against a complete low-pressure zone.

3. The Required Pressure Increase for Collapse (ΔP_collapse)

To overcome the chiral resistance of the lattice and force this laminar phase, the local pressure on the particle barriers must be increased up to the maximum surface pressure of $4 \cdot P_0$. Since the medium already possesses a latent baseline pressure of $1 \cdot P_0$, the hydrodynamic water hammer pressure increase constitutes:

$$\Delta P_{collapse} = 3 \cdot P_0 = 2.620404917309226 \times 10^{30}\ Pa$$