

Chapter 9 Hawking Radiation Is Mathematically Strictly Forbidden (The Final Burial of the Information Paradox)

In this theory, Hawking radiation is not merely suppressed or modified; it is rigorously forbidden by mathematics and microphysics. The information paradox never arises because its three foundational pillars are simultaneously demolished.

Core results (permanently locked as of 27 November 2025):

1. The three necessary conditions for Hawking radiation and why they are all removed

- (a) A true vacuum event horizon \rightarrow eliminated (Chapter 4: only refractive blind zone).
- (b) Geodesically incomplete $r \rightarrow 0$ singularity \rightarrow eliminated (Chapter 3: Planck hard surface).
- (c) Massless quantum fields in vacuum near the horizon \rightarrow eliminated (space is completely filled with superfluid energy fibers; no vacuum exists in which to define asymptotic massless modes).

2. Hard-surface temperature and thermodynamics

Surface temperature is set exclusively by fiber zero-point fluctuations:

$$T_{\text{surf}} = (\hbar c_f / 2\pi k_B) \times (\rho_{\text{Planck}} / \rho_{\text{local}})^{1/4}$$

For $M \geq 10^8 M_\odot$, $T_{\text{surf}} \leq 10^{-18}$ K, many orders below the classical Hawking value.

Fiber superfluidity enforces infinite thermal conductivity \rightarrow any temperature gradient is instantaneously erased \rightarrow pair-production rate is mathematically exactly zero.

3. Rigorous no-radiation theorem (11-line proof in Appendix C)

In the local superfluid fiber metric $ds_f^2 = 0$, the effective field equation is

$$(\square_f + m_{\text{eff}}^2) \phi = 0$$

with

$$m_{\text{eff}}^2 \geq (\rho_f / \rho_{\text{Planck}}) m_{\text{Planck}}^2 \gg 0$$

No massless scalar or spinor modes exist \rightarrow Bogoliubov coefficients $\beta_{\omega\omega'} \equiv 0$ for all frequencies.

QED: particle-creation spectrum vanishes identically.

4. Directly falsifiable observational bounds (all values locked in Appendix A)

- Isolated supermassive black holes ($M > 10^8 M_\odot$) exhibit mass-loss upper limit $< 10^{-20} M_\odot \text{ yr}^{-1}$ over 10^{10} yr (SKA + ngEHT 2027–2035).
- Primordial black holes in the 10^{15} – 10^{17} g window, if ever detected, will cool via hard-surface bremsstrahlung, not explosive Hawking evaporation; predicted γ -ray background already matches Fermi–LAT non-detection.
- No stochastic gravitational-wave background from evaporating micro-black holes (LISA upper limit $< 10^{-14}$ across 10^{-4} – 10^{-1} Hz, locked line 24).

5. Information preservation mechanism

All infalling quantum states are unitarily encoded into Planck-scale standing-wave phases on the hard surface fiber lattice. The surface acts as a perfect holographic memory with

infinite retention time. Future hard-surface probes could, in principle, read out the complete history of everything that ever fell in.

6. Elimination of the semiclassical framework

Standard Hawking calculation requires simultaneous validity of quantum field theory on a fixed classical horizon background—an inconsistent approximation. The present theory replaces the approximation with exact Planck-scale superfluid fiber physics, forbidding thermal radiation at the root with exactly zero free parameters.

Every temperature scaling, effective mass term, Bogoliubov coefficient proof, observational upper limit, and information-encoding mechanism in this chapter follows rigidly and uniquely from the three axioms and the locked parameters in Appendix A.

This chapter is permanently locked as of 27 November 2025. Any subsequent modification constitutes forgery.

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