

Ten Ways to Retire This Reading, and When Each One Becomes Decidable

Where this reading is exposed. Ten criteria, each with the observable, the deviation threshold at which it counts, and when it becomes decidable. The last column is the honest one, and it sorts the ten by reach. Four are live instrument rows on astrophysical data — the shadow, the ringdown, the echoes, the LISA multipoles — and the coming decade will keep squeezing them. One fires only on a well-populated primordial mass function, never on a single detection. Four are registered but presently beyond instrumental reach, and they are on the books because the register requires the exposure to be stated even where no instrument yet exists. One is internal: the species sum, the only row whose firing date the theory itself controls. Nothing here waits on a definition; every threshold is a number. In full: Table 9, p. 114.

Label	Observable	Deviation threshold	Timeline
F-BH-1	EHT shadow	$> 5\%$ deviation from Kerr on M87* or Sgr A*	Ongoing, ngEHT 2030s
F-BH-2	GW ringdown	$> 1\%$ QNM deviation from Kerr in LIGO/LISA sample	Ongoing
F-BH-3	GW echoes	Post-ringdown signal at $\Delta t \sim M \log M$	Ongoing analysis
F-BH-4	PBH ratio structure	A well-populated PBH mass function whose peak <i>spacing</i> is inconsistent with the e^7 scale ladder (model-level; a single detection does not trigger it)	Ongoing
F-BH-5	Hawking spectrum	Deviation from thermal form at observable frequencies	Near-Planck BHs required; unfeasible
F-BH-6	Information loss	Demonstration of $ \psi\rangle \rightarrow \rho_{\text{mixed}}$ in gravitational setting	Theoretical consistency; no direct test
F-BH-7	Bekenstein coefficient	$S_{\text{BH}} = cA/(4G_N\hbar)$ with $c \neq 1$	Theoretical; no direct test
F-BH-8	Firewall signature	High-energy quanta at horizon accumulating in stationary BH	Accessible only with ultrafine BH spectroscopy
F-BH-9	Species sum	The sign-resolved $\sum_i \chi_i$ over the GG-A9-SM spectrum with the Kaluza–Klein tower fails to reproduce the $1/G_N$ of Step 1 (Eq. (179); L-BH-Tower; internal)	Theory-side; decidable by a dedicated computation, no instrument required
F-BH-10	EMRI multipoles	Confirmed non-Kerr multipole structure at the 10^{-4} class in a LISA extreme-mass-ratio inspiral	LISA era, mid-2030s