

HGP Research Pack v3 — Addendum

Bayesian Model Comparison + Falsification Scorecard

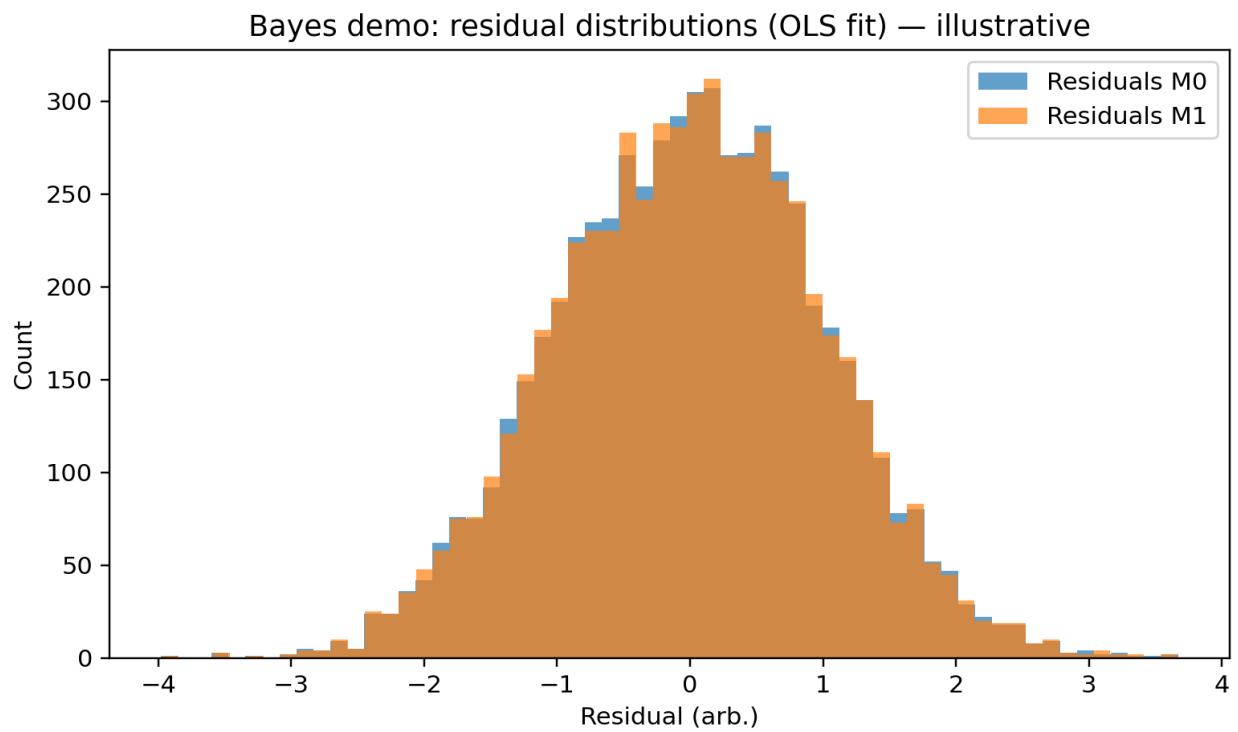
This addendum extends v2 with Bayes factors and an evidence scorecard. Synthetic demo only.

1) Bayesian model comparison

Bayes factors compare the evidence for a model that includes an ON/OFF (sched) term against a confound-only model. They complement permutation tests and regression by explicitly accounting for model complexity and prior beliefs. A sensitivity analysis over priors is required in any serious claim.

Model	Formula	log marginal
M0	sensor ~ 1 + temp + time	-8568.75
M1	sensor ~ 1 + temp + time + sched	-8578.98
	log BF10 (M1/M0)	-10.23

Figure: Bayes demo residuals (synthetic)



2) Falsification Scorecard

The scorecard is an evidence ledger: you cannot advance a claim without linking artifacts (plots, logs, raw-data hashes). It includes Bayesian gates B1/B2 on top of the standard metrology gates.

Gate	Criterion	PassFail	EvidenceLink	Notes
G0	Instrument sanity (calibration, saturation, metadata)			
G1	Null equivalence under blinding			
G2	Polarity flips + wiring/ground topology swaps do not explain effect			
G3	Environment confounds recorded + regressed (temp/humidity/EMI)			
G4	Independent replication (same protocol, comparable effect)			
G5	Optional: strict energy accounting excludes conventional sources			
B1	Bayes factor computed with declared priors; sensitivity analysis done			
B2	Model comparison favors anomaly model across reasonable priors			

Full editable file: /docs/HGP_Falsification_Scorecard.csv