

AITP Research Notebook

Topic: Aitp Research Notebook Sample

This notebook is rebuilt from the authoritative JSONL operation log. Each section records one research event, preserving narrative context, machine metadata, and structured details for later audit.

AITP Kernel

Generated: 2026-04-18T21:38:56+08:00

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Candidate Update: Finite-size scaling looks stable

Candidate Update

candidate_update

Time 2026-04-18T21:38:56+08:00

Run demo-run-001

Status: promoted

候选结论：在当前 toy model 上，谱隙随系统尺寸增大呈现稳定收敛趋势。

Inline check: the fitted exponent is $\alpha \approx 1.97$.

$$\Delta_N \approx \Delta_\infty + cN^{-\alpha}$$

Structured Details

	Value
Field	
dataset	toy_chain_v3
fit_window	N = 24, 32, 40, 48
residual	1.8e-3
artifacts	["figures/gap_fit.pdf", "tables/gap_fit.csv"]

Strategy Record: Symmetry-constrained ansatz before brute-force sweeps

Strategy Record

strategy

Time 2026-04-18T21:38:56+08:00

Run demo-run-002

Status: tentative

这次更有效的做法不是盲扫参数，而是先把对称性约束写清楚，再缩小搜索空间。

Practical note: keep a short rejection log for ansatz choices that fail quickly.

Structured Details

	Value
Field	
worked_because	Search space dropped by roughly one order of magnitude.
watch_out	Can over-constrain the trial family if assumptions are too strong.

Automated Action: Automated follow-up search surfaced a mismatch

Automated Action

auto_action

Time 2026-04-18T21:38:56+08:00

Run demo-run-003

Status: failed

自动动作触发后，系统对 benchmark 文献和当前推导做了对照。
Result: one reference used a different normalization convention, so the first comparison failed.

Structured Details

	Value
Field	
trigger	follow-up literature scan
mismatch	{ "field": "normalization", "expected": "2pi periodic", "observed": "pi periodic" }
next_action	Recompute comparison under unified convention.

Iteration Journal: Loop 4 summary and confidence update

Iteration Journal

iteration_journal

Time 2026-04-18T21:38:56+08:00

Run demo-run-004

Status: in_review

本轮闭环的关键进展是：候选命题没有被推翻，但可信度提升主要来自排除了两个常见伪象。
Confidence moved from cautious to moderately positive, but not yet publication-ready.

Structured Details

	Value
Field	
surprises	["Finite-size drift was smaller than expected.", "One control experiment was inconclusive."]
stuckness	low
human_attention_needed	Check whether the benchmark choice is too easy.

Closed-Loop Result: Notebook-style closure snapshot

Closed-Loop Result

closed_loop_result

Time 2026-04-18T21:38:56+08:00

Run demo-run-005

Status: approved

闭环结果：当前路线值得继续，但应把“规范约定统一”提升为显式 gate。
Summary metric: $F_1 = 0.91$, with no contradiction detected in the present validation slice.
$$\mathcal{L}_{\text{score}} = \lambda_1 E_{\text{fit}} + \lambda_2 E_{\text{consistency}}$$

Structured Details

	Value
Field	
decision	continue_with_guardrail
metrics	{"f1": 0.91, "consistency_checks": 7, "failures": 1}
artifacts	["reports/closure_summary.md", "plots/consistency_matrix.pdf"]