Flux Mind Whitepaper v1.0

The Lambda-M Index:

A Phase-State Model of Human Mental Momentum

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1 Abstract

The Lambda-M Index is a quantitative model designed to capture hourly phase transitions in human mental momentum. Grounded in the Framework of Motion (Öz → Öz transformation) and the Flux State Architecture, Lambda-M aggregates three core dimensions of cognition: *activity*, *resilience*, and *mood*. Each dimension is evaluated on a standardized 1–5 scale and normalized into a continuous 0–1 output. The final Lambda-M value reflects the instantaneous mental flux state of an individual.

2 1. Introduction

Human cognition exhibits fluctuating momentum across time. These fluctuations can be interpreted as *phase states*—transient configurations of mental energy, focus, adaptability, and emotional coherence.

Flux Mind operationalizes these transitions through a single consolidated metric: the **Lambda-M Index**. This index reflects the accumulated cognitive momentum of the preceding hour.

This paper introduces:

- The conceptual basis of Lambda-M
- The measurement scales (Activity, Resilience, Mood)
- The mathematical model
- Normalization and aggregation procedures
- Threshold definitions for phase-state classification
- Example scenarios and use cases

3 2. Conceptual Model

Lambda-M is grounded in three cognitive axes:

1. **Activity (A)**: Mental tempo and effort investment
2. **Resilience (R)**: Openness to new information and adaptability
3. **Mood (M)**: Internal affective coherence

Each axis uses a structured 1–5 qualitative scale representing the dominant cognitive pattern of the **previous hour**.

The model assumes:

- Hourly sampling captures phase momentum accurately
- A linear mapping from 1–5 to 0–1 is sufficient
- The axes contribute equally in the baseline model (v1.0)

4 3. Measurement Scales

4.1 3.1 Activity Scale (A)

- 1: Rest Mode
- 2: Calm Flow
- 3: Balanced Effort
- 4: High Focus
- 5: Intense Production

4.2 3.2 Resilience Scale (R)

(Reverse contribution: 1 is best, 5 is worst.)

- 1: Like Water
- 2: Flexible
- 3: Depends on the Situation
- 4: Resilient
- 5: Like a Wall

4.3 3.3 Mood Scale (M)

- 1: Dark / Depressed
- 2: Gray / Cloudy
- 3: Neutral / Calm
- 4: Clear / Bright
- 5: Shiny / Sparkling

5 4. Mathematical Framework

5.1 4.1 Normalization

Raw 1–5 values are mapped to the unit interval using:

$$\text{norm}(x) = \frac{x - 1}{4}$$

for $x \in [1, 5]$.

5.2 4.2 Axis Calculations

$$VOL\_Z = \text{norm}(A)$$

$$FNG\_NORM = \text{norm}(M)$$

Resilience contributes inversely:

$$LEV\_STRESS = 1 - \text{norm}(R)$$

5.3 4.3 Lambda-M Aggregation

$$\Lambda_M = \frac{VOL\_Z + LEV\_STRESS + FNG\_NORM}{3}$$

$$\Lambda_M \in [0, 1]$$

6 5. Threshold States

A proposed classification:

- 0.00–0.20: Low Momentum State
- 0.20–0.40: Fragile State
- 0.40–0.60: Stable State
- 0.60–0.80: High Momentum State
- 0.80–1.00: Elevated State

7 6. Phase-Shift Logic

A **Phase Shift** occurs when:

- Λ_M remains below a threshold for 3 consecutive samples
- Λ_M rises or drops by ≥ 0.30 within 2 hours
- A cross-boundary transition occurs between defined states

A phase shift may indicate:

- Cognitive overload
- Deep focus emergence
- Emotional destabilization
- Recovery or restoration

8 7. Example Scenarios

8.1 7.1 High-Performance Academic Session

$$A = 5,\ R = 3,\ M = 4$$

$$\Lambda_M = \frac{1 + (1 - 0.5) + 0.75}{3} = 0.75$$

State: High Momentum

8.2 7.2 Morning Low-Energy State

$$A = 2,\ R = 5,\ M = 2$$

$$\Lambda_M = \frac{0.25 + 0 + 0.25}{3} = 0.17$$

State: Low Momentum

9 8. Use Cases

- Educational environments
- Workplace productivity analysis

- Mental health early-warning signals
- Personal self-awareness dashboards
- Longitudinal behavioral research

10 9. Future Work

- Weighted Lambda-M model (v2.0)
- Time-decay integration
- Non-linear mappings for each axis
- Multi-day momentum estimation

11 Appendix

Full DICT tables and UI mappings are included here.