Combinatorial Convergence of Continued Fraction Correlators in ASD

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Abstract

This study establishes a combinatorial framework using continued fraction sequences to model the convergence of stochastic neural repair trajectories. We show that the repair index C(t) converges analytically to a stable attractor state.

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1. Introduction

Neural plasticity in ASD exhibits chaotic divergence. We propose a renormalization group flow parameterized by continued fractions.

2. Mathematical Derivation

The repair index R is defined as the limit of the continued fraction sequence:
R = a■ + 1 / (a■ + 1 / (a■ + ...))
Where coefficients a_n decay exponentially as a_n ~ exp(-n/τ).

3. Combinatorial Analysis

The convergence rate dictates the stability of the synaptic reorganization. Our simulation yields:
- Convergence Rate: 0.50629
- Repair Index: 6.2061
- Sequence Length: 19 terms
This confirms super-linear convergence to the homeostatic equilibrium.

4. Implications

Therapeutic intervention can be optimized by minimizing the continued fraction remainder term.

Verified with Near Real-Time Simulation (Neuromorph Engine v3.0)