

Domain Analyses: Growth Trajectories and Open Problems

This supplementary section provides detailed characterizations of each of the eight tracked Active Inference domains, organized under three tiers: A (Core Theory), B (Tools & Translation), and C (Application Domains).

Domain A: Core Theory

A1 — Quantitative & Formal Theory ($n = 120$, 9.9%)

The A1 domain develops the mathematical foundations underpinning the Free Energy Principle: information geometry, category-theoretic formulations of Markov blankets, path integral formulations of free energy minimization, and gauge-theoretic perspectives on self-organization. A central debate concerns the ontological status of Markov blankets—whether they correspond to real physical boundaries or are merely useful statistical constructs [bruneberg2022emperor](#). Recent work on Bayesian mechanics [sakthivadivel2023bayesian](#) aims to place the FEP on firmer mathematical footing. With 120 papers, A1 captures nearly 10%