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NON-PROPRIETARY ABSTRACT · PUBLIC RELEASE · TEP-MATHBAC-2026-PR1

The Education Project Submits Full Proposal to DARPA MATHBAC Program to Architect Invariant Geometries of Autonomous Agent Networks

Leveraging a validated lineage in contested RF corridors, the INVARIANT™ framework models collective machine understanding as a physically constrained system rather than a predictive one.

MIAMI, FL, June 18, 2026 - The Education Project Corp, announced today the formal submission of its full technical proposal on June 15, 2026 to the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) in response to the Mathematics of Boosting Agentic Communication (MATHBAC) Program Announcement (DARPA-PA-26-05). The proposal, titled "INVARIANT™: Geometry of Agentic Authority," targets Technical Area 1 (TA1) to establish the definitive mathematical foundational abstractions and governing physical laws for secure, decentralized machine-to-machine communication architectures operating in highly contested domains.

The DARPA MATHBAC TA1 Mandate

Modern defense systems increasingly rely on decentralized clusters of autonomous artificial intelligence (AI) agents tasked with dynamically sharing information, coordinating actions, and adapting maneuvers at high velocities. However, current agent paradigms optimize almost exclusively for local predictive capabilities. When these multi-agent networks operate in un-modeled, corrupted, or actively manipulated threat environments, minor localized representational errors quickly compound. This results in "cognitive drift," where nodes communicate with high mathematical confidence while completely decoupling from external physical reality.

DARPA's MATHBAC Technical Area 1 (TA1) solicitation published on April 7, 2026, explicitly demands new mathematical models to identify, characterize, and prevent this systemic fragmentation. The program requires structural abstractions capable of predicting when collective machine communication will break down, establishing rigorous bounds for network-wide agreement, and creating mathematically sound recovery protocols before task-level catastrophic failure occurs.



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The INVARIANT™ Response: Physics Over Prediction

The Education Project's INVARIANT™ framework directly addresses the TA1 solicitation by shifting the problem of multi-agent coordination entirely away from speculative software optimization and framing it as a constrained physical system. Instead of attempting to enforce alignment through computationally heavy, slow software synchronization layers, INVARIANT™ introduces a canonical order parameter, $\Sigma(t)$, which treats collective machine understanding as a measurable geometric state bound by topological and thermodynamic laws.

To protect sensitive defensive capabilities from adversarial exploitation, the specific algebraic and structural parameters of the framework remain tightly compartmentalized. At a high conceptual level, the INVARIANT™ architecture operates across a three-layer geometric abstraction matrix:

01 Communication Topology™

Tracks information-propagation graphs natively via persistent topological invariants - detecting structural erosion long before task-level errors become visible to an adversary.

02 Authority Geometry™

Encodes directed trust distributions and mathematical authority margins, defining the boundary separating stable state preservation from total sovereignty fracture.

03 Shared Reality Geometry™

Projects high-dimensional latent state vectors into a unified geometric space, measuring convergence toward - or divergence from - verifiable environmental invariants.

A Prior Validation Record: From RF Corridors to Agentic Geometry

The core mathematical foundations of the INVARIANT™ submission are not theoretical hypotheses compiled in response to the DARPA solicitation. The Education Project's proposal is backed by an extensive, multi-generation research lineage focused on system survivability in corrupted environments. This mathematical foundation was established prior to the release of the MATHBAC solicitation, as evidenced by the team's formal pre-print, "The Metric of Deception: Topological Singularities in Saturated RF Corridors" (Zenodo: zenodo.org/records/19258675).

The peer-reviewed pre-print documented extensive operational validation within saturated, actively spoofed radio frequency (RF) corridors. In those dense environments, the architecture successfully isolated adversarial signal injections and mapped the physical boundaries where classical communication models collapse. The MATHBAC submission extrapolates these validated topological proofs and boundary-characterization mechanics from low-level RF spectrum corruption up into the cognitive, data-sharing, and authority-preservation layers of distributed agent networks.



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By relying on a proven lineage that characterizes precisely where a system degrades - rather than claiming absolute invulnerability - INVARIANT™ delivers an un-cheatable, mechanism-gated framework that moves multi-agent survivability from simulated software optimization into verifiable physics.

Empirical Validation Foundation

179,355 + 2000 CH SERIES DETERMINISTIC, SEED-REPRODUCIBLE
ADVERSARIAL SIMULATION EPISODES

The INVARIANT™ submission is grounded in an extensive empirical record rather than theoretical claims alone. The team's broader research program encompasses well over 179,000 deterministic, seed-reproducible adversarial simulation episodes, conducted across multiple independent test environments spanning runtime supervisory assurance, state reconstruction under signal corruption, authority preservation and recovery, and structured falsification testing. This empirical foundation - developed prior to, and independent of, the DARPA solicitation - provides the validated basis from which the INVARIANT™ geometric framework was extrapolated.

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About The Education Project Corp

The Education Project Corp is a 501(C)(3) organization that specializes in the research of beyond frontier intelligent systems and high-assurance technical development. In licensing partnership with Peregrine Research, Inc., the organization translates foundational geometric and topological invariants into hard-tech, microelectronics, and advanced software architectures designed to sustain operational continuity and asset sovereignty under absolute adversarial stress within contested physical and electromagnetic domains.

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