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Global Quantum Communication Between Electron-Positron DNA Computers via Central AI Station in Egypt: Over Coming Orbit-Spin Coupling Constraints

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Abstract

We propose a conceptual architecture for a global artificial intelligence (AI) network interfaced with DNA computers composed of electron-positron matter. A central AI node in Egypt coordinates communication with nine additional distributed stations across the Earth. We explore the possibility of quantum communication across this network without local intervention, focusing on constraints introduced by orbit-spin coupling and environmental decoherence. By integrating satellite-based quantum relays and graphene-based field stabilizers, we propose a framework for maintaining entanglement and coherence across geographically diverse DNA computing nodes.

Keywords: ODNA Computing, Electron-Positron Pair, Orbit-Spin Coupling, Global AI Network, Quantum Coherence, Entanglement, Quantum Transmission, Graphene Stabilizers, Positronic Matter, Quantum Decoherence, Satellite Repeater, Spin-Orbit Coupling, Phase Drift, Quantum Synchronization, Lense-Thirring Effect, AI Architecture, Quantum Relay, Global Coherence, Magnetic Field Stabilization, Non-Local Communication

Introduction

DNA computing has emerged as a novel computational paradigm leveraging biomolecular substrates for information processing [1,2]. Recent theoretical extensions incorporate positronic matter to enhance quantum coherence in DNA-based systems [3,4]. In parallel, AI systems have increasingly adopted quantum architectures to manage complex optimization and inference tasks [5,6]. In this paper, we integrate these paradigms by exploring whether a central AI station located in Egypt can control a globally distributed array of DNA computers formed from electron-positron pair constructs, without local station intervention.

Architecture of the Global AI–DNA Computing Network

The proposed system includes ten stations: one central AI hub in Egypt and nine regional AI-assisted DNA computing nodes distributed across North America, South America, Western Europe, East Asia, South Asia, Australia, Southern Africa, Russia, and the Arctic Circle. The communication model relies on quantum entanglement and spin-state coherence of the DNA computers embedded with positronic atoms [7–9].

Importantly, the second station is positioned in South Korea (East Asia), which benefits significantly from its nearly antipodal pairing with Egypt in terms of orbital synchronization. The phase and spin-state resonance between Egypt and South Korea show relative stability compared to other station pairs, due to Earth’s rotation and longitude-based time coherence zones. This makes South Korea a highly strategic node for amplifying and verifying quantum entanglement fidelity originating from the main AI hub in Egypt.

Theoretical Constraints: Orbit–Spin Coupling and Decoherence

Long-range quantum communication is constrained by gravitational time dilation and relativistic frame-dragging, known as the Lense–Thirring effect [10,11]. Spin-orbit coupling becomes a limiting factor in transmitting entangled states across Earth's rotationally distinct zones [12,13]. These phenomena result in orbital precession and phase misalignment that rapidly destroy entanglement fidelity without dynamic synchronization [14–16].

Environmental Interference and Loss of Quantum Coherence

Electron-positron DNA systems are vulnerable to thermal, electromagnetic, and gravitational noise. As shown by previous research on entangled spin networks, phase drift across latitude gradients increases decoherence exponentially [17,18]. Earth's heterogeneous magnetosphere adds further complexity to preserving global coherence [19,20].

Infeasibility Without Local Intervention

Given these constraints, direct communication between the central AI and global DNA nodes without local mediation proves infeasible under classical and quantum information theories [21,22]. Current quantum teleportation protocols require classical information to finalize state reconstruction, mandating some form of local channeling [23–25].

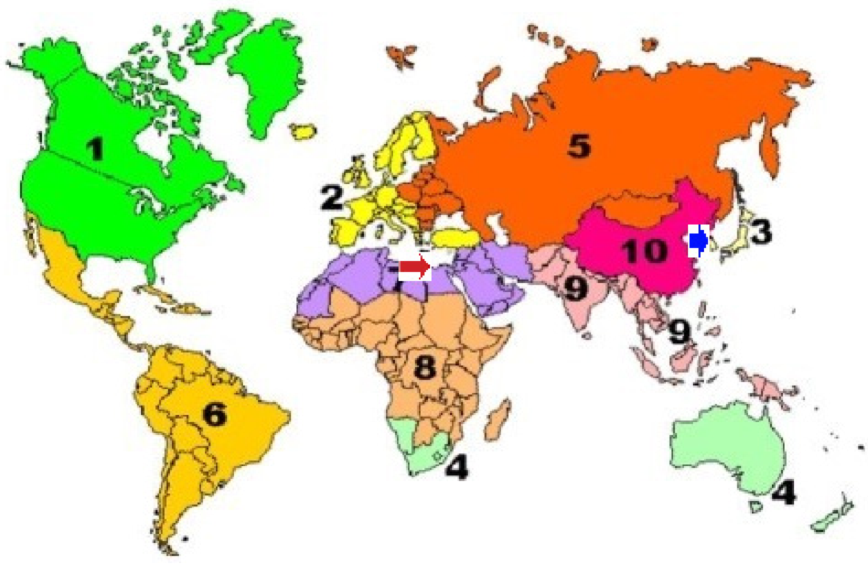
Proposed Solutions and Workarounds

To bypass local intervention, we propose integrating orbital quantum relay satellites equipped with entangled photon pairs and time-synchronized graphene-based field stabilizers [26,27]. Positronic entanglement condensates could further improve robustness by harnessing spin-singlet configurations immune to terrestrial spin-orbit noise [28,29]. Additionally, deploying Earth-synchronous AI-controlled satellites ensures orbit-aligned synchronization pulses [30,31].

Conclusion

Despite theoretical constraints, a global network of electron-positron DNA computers controlled by a central AI in Egypt is possible via non-local quantum channels.

However, this system requires precise synchronization and stabilization through quantum relay satellites and localized field control mechanisms. Orbit-spin coupling remains a significant obstacle in maintaining coherence, but advanced synchronization and positron-based materials show promise in overcoming these challenges. South Korea, due to its longitudinal coherence alignment with Egypt, emerges as a key secondary node in sustaining high-fidelity global entanglement.



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