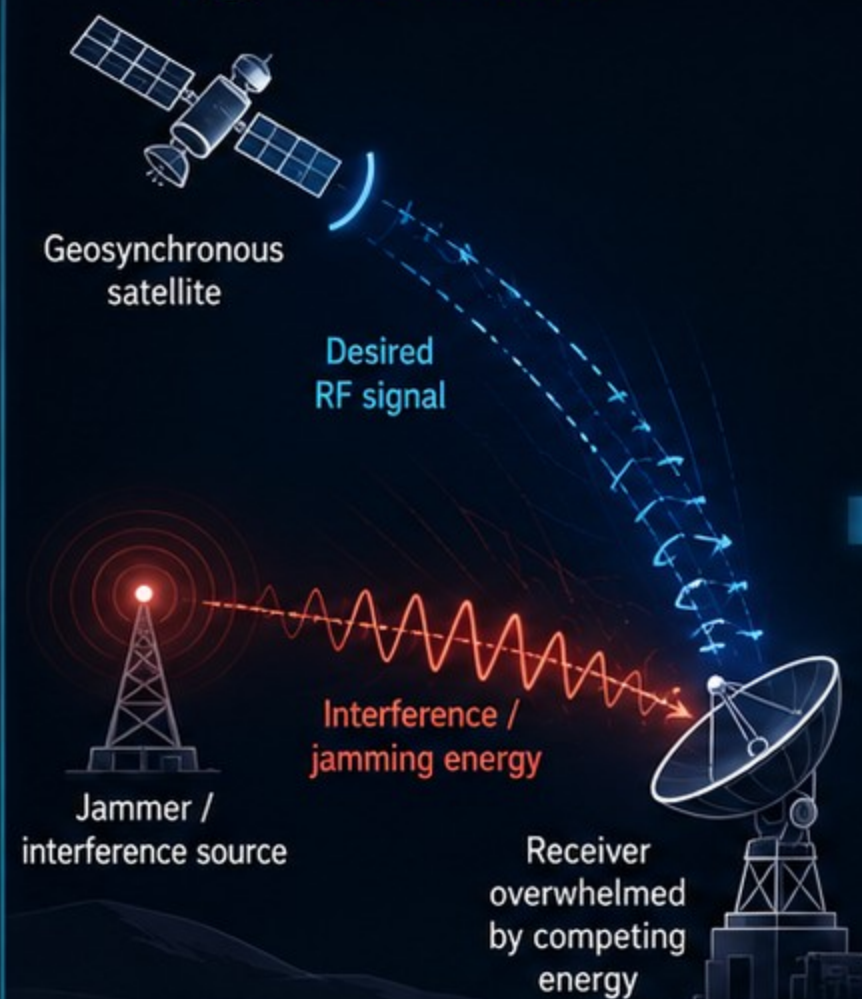


StreamSync in Contested Signal Environments

Could biologically inspired adaptive phase synchronization provide a coherence layer for resilient communications under interference?

① The Problem



Like trying to hear one speaker while another shouts over the conversation.

② The StreamSync Idea

From chaotic streams...



...toward synchronized coherence



Adaptive phase synchronization layer

Identify which streams belong together, reinforce coherent structure, and adapt as interference changes.

Biological +
Mathematical Inspiration

 **Fireflies:**
decentralized
synchronization

 **Bats:**
adaptive
signaling
under clutter

 **Kuramoto
dynamics:**
emergent
phase locking

③ Potential Value



1. Coherence detection

Track when useful signal structure is degrading



2. Coherent cluster identification

Find the subset of observations that still belong together



3. Adaptive re-coordination

Let surviving components reorganize toward a stable synchronized state



4. Resilient reacquisition

Recover useful coherence after disturbance



 Toward more resilient communications under interference

 Exploratory application concept only. StreamSync is not presented here as a validated anti-jamming product or military system.