EPSCoR RII Track 1 Theme Proposal:

Cybersecurity Initiative for Oklahoma

Security in Knowledge Society

- Cryptography and network security (CS, ECE and Math)

- Secure communication and transmission (CS and ECE)

- Information Assurance (CS, IS)

- Counter Cyberwarfare (International relations, Finance, CS)

Technical Issues

Confidentiality

Only sender and intended receiver should "understand" message contents

End-Point Authentication

Sender and receiver want to confirm identity of each other

Message Integrity

Sender and receiver want to ensure message not altered (in transit, or afterwards) without detection

Unbreakable Transformations

Physics and Engineering of Storage and Transmission

Partnership Across Disciplines

Computer Science:

Cryptography, Computer networks, Architecture, Cloud computing, Quantum computing

Mathematics:

Number theory

Physics:

Quantum theory, Optics

Electrical and Computer Engineering:

Architecture, Communications

Where We Stand & Broader Impact

- Existing strengths in CS, Physics, Number Theory, Information Assurance
- Our New Quantum Cryptography Protocol (Oklahoma)
- Existing Inter-University Partnerships and Synergy
- Unbreakable communication codes have applications to banking and defense
- New technologies of transmission and coding

Participants

- OSU: S. Kak, E. Chan-Tin, T. Chin, J. Thomas (CS), G. Agarwal (Physics), TBD (Spears SB)
- OSU-CHS: A. Kaul
- OU: P. Verma, J. Sluss (ECE), K. Thulasiraman (CS)
- TU: J. Hale & Others TBD
- Additional Universities