REDUCED-DELAY INTERFERENCE-AWARE OPPORTUNISTIC RELAYING

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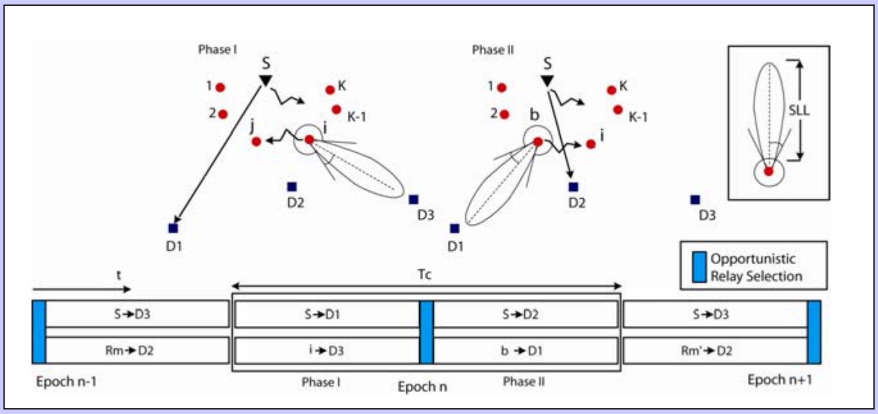


1. INTRODUCTION & MOTIVATION

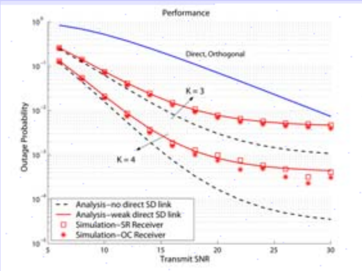
- Reduced-delay downlink access.
- No network coding (and respective delay).
- No (fancy) high-complexity receivers.

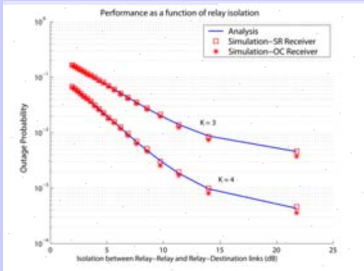
2. APPROACH

- Relay without ``respecting'' other relays (no delay).
- Opportunistic selection of ``best'' relay.

3. ANALYSIS & RESULTS

- Selection or Optimum Combining receiver that combines direct and relay transmission (depending on amount of CSI availability).
- Random network topology – calculation of steady-state performance, for any interfering relay.
- Despite relay-induced interference, performance reaches a plateau.
- The plateau can be engineered to be sufficiently low, using ``appropriate'' relays.
- Appropriate relays: those that are isolated from each other and offer strong paths towards source and destination.



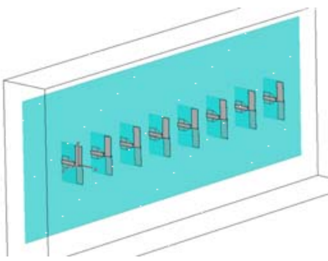


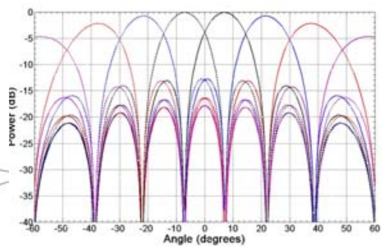
5. CONCLUSION

- Despite relay-induced interference, reduced-delay, interference-aware reliable forwarding is possible.
- The notion of ``relay usefulness'' is redefined. Engineering inter-relay isolation is challenging (but doable)!

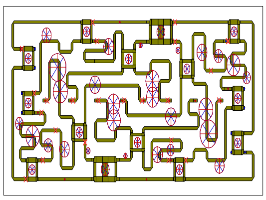
4. PRACTICAL CONSIDERATIONS

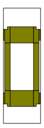
- A (simple) 8x8 Butler matrix antenna could be used for each relay, for sufficient inter-relay isolation!



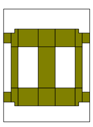


The components for (possible) switch beam relay antenna front-end!

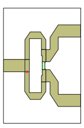




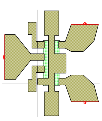
Hybrid



Crossover



Wilkinson



Switch

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7. ACKNOWLEDGEMENTS

This work is implemented through the O.P. Competitiveness 3rd Community Support Program and is funded from the Hellenic State-Ministry of Development-General Secretariat for Research and Technology.