
Receiver Based Alien Crosstalk Mitigation

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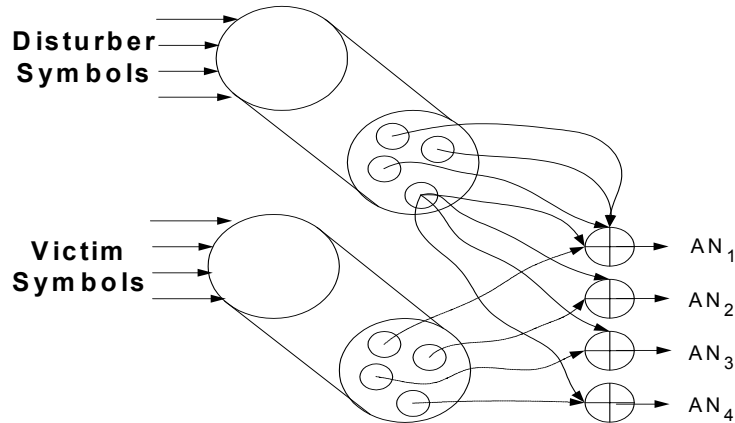
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Solarflare Communications

Outline

- **Correlation**
- **Example Solution**
- **Performance Results**
- **Connection to Previous Capacity Results**
- **Conclusions**

Spatial Correlation



Cross Correlation Between The Composite Disturber Noise in Victim Pair "K" with Victim Pair "J"

$$C(K,J)=\text{Cov}(AN_K,AN_J)/\text{sqrt}(\text{VAR}(AN_K)\text{VAR}(AN_J))$$

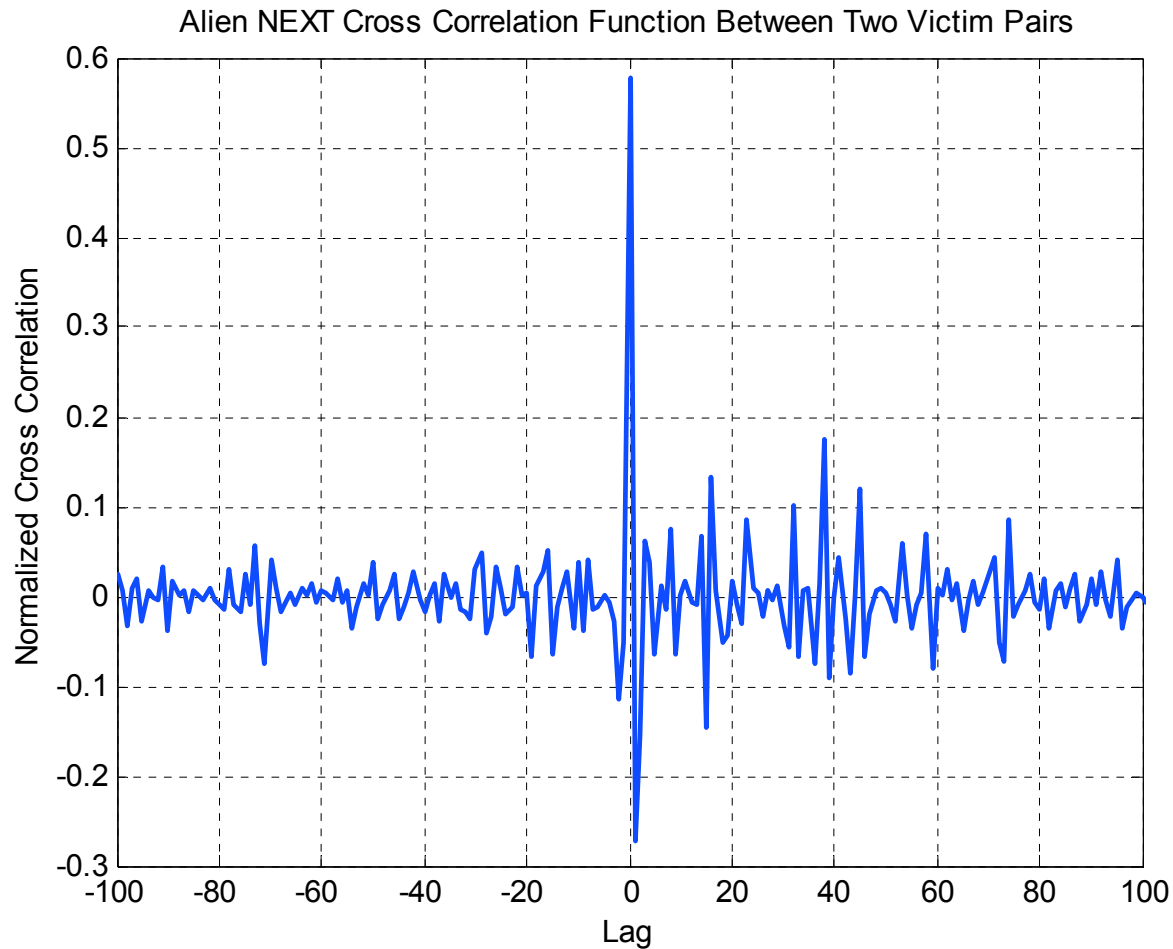
Loosely Bundled

K	J	C(K,J)
1	2	.14
1	3	.22
1	4	.15
2	3	.17
2	4	.57
3	4	.30

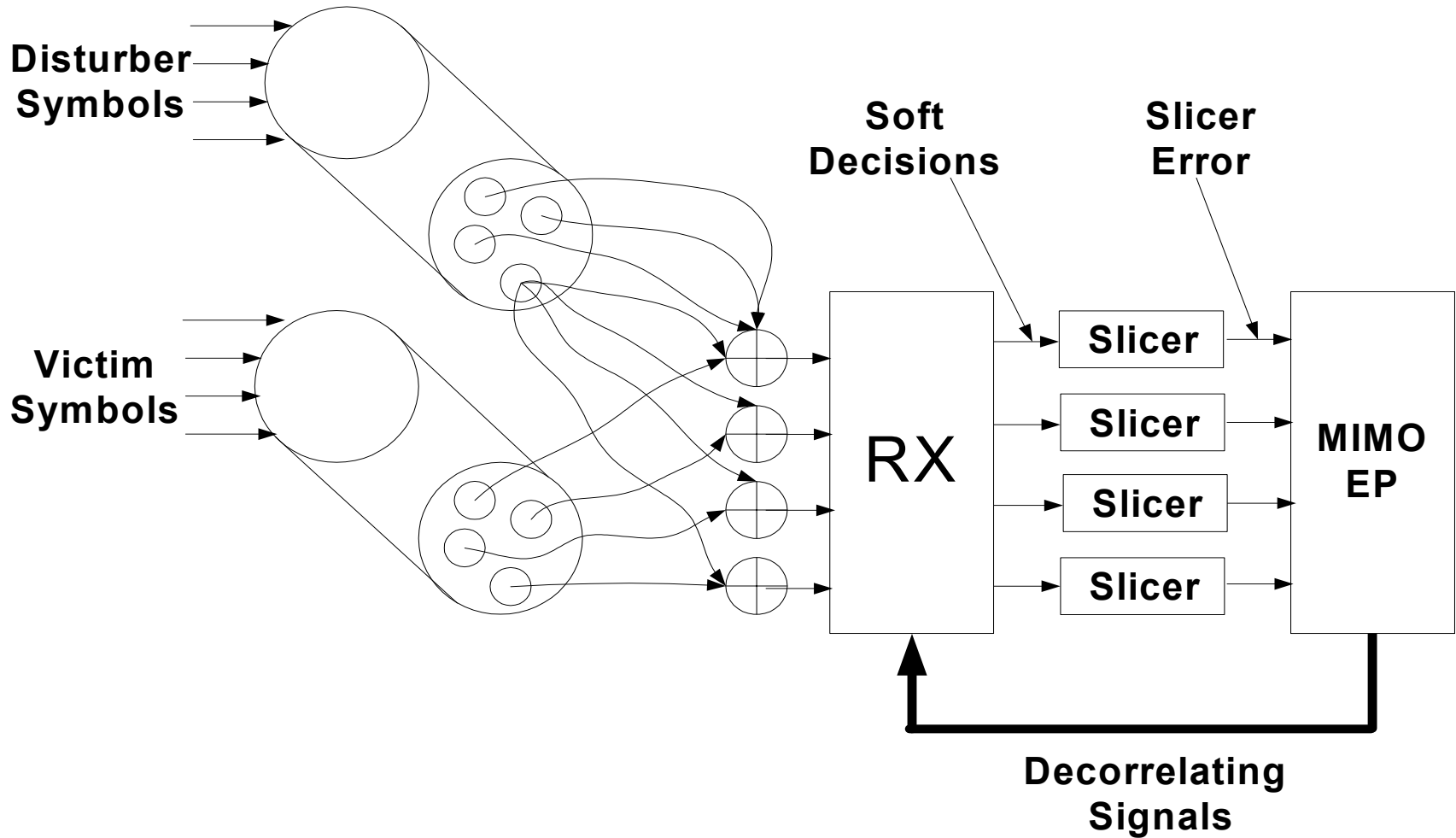
Tightly Bundled

K	J	C(K,J)
1	2	.13
1	3	.15
1	4	.17
2	3	.19
2	4	.48
3	4	.21

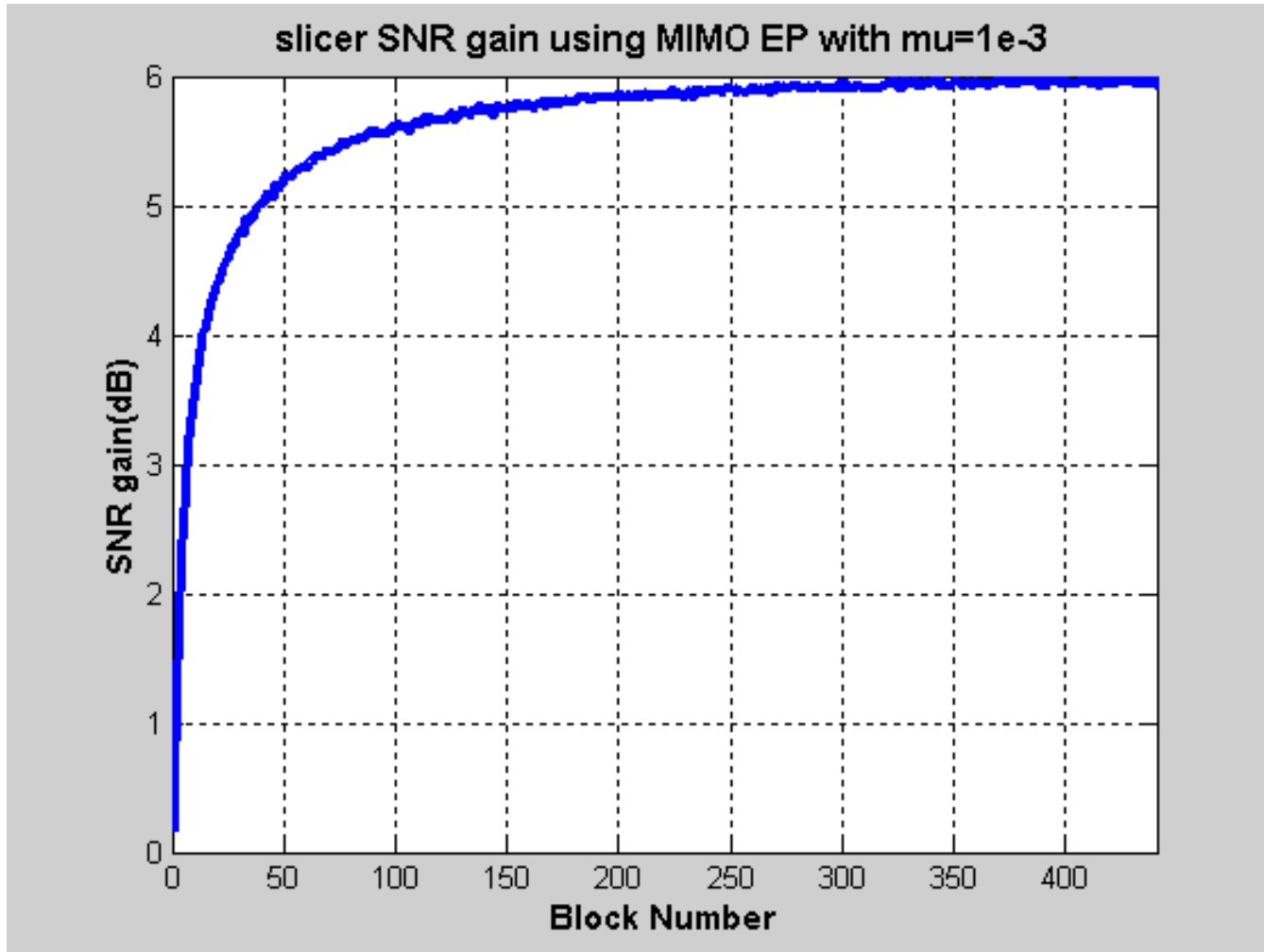
Temporal Correlation



System Model Including MIMO MMSE Error Predictor (EP)



Training Example



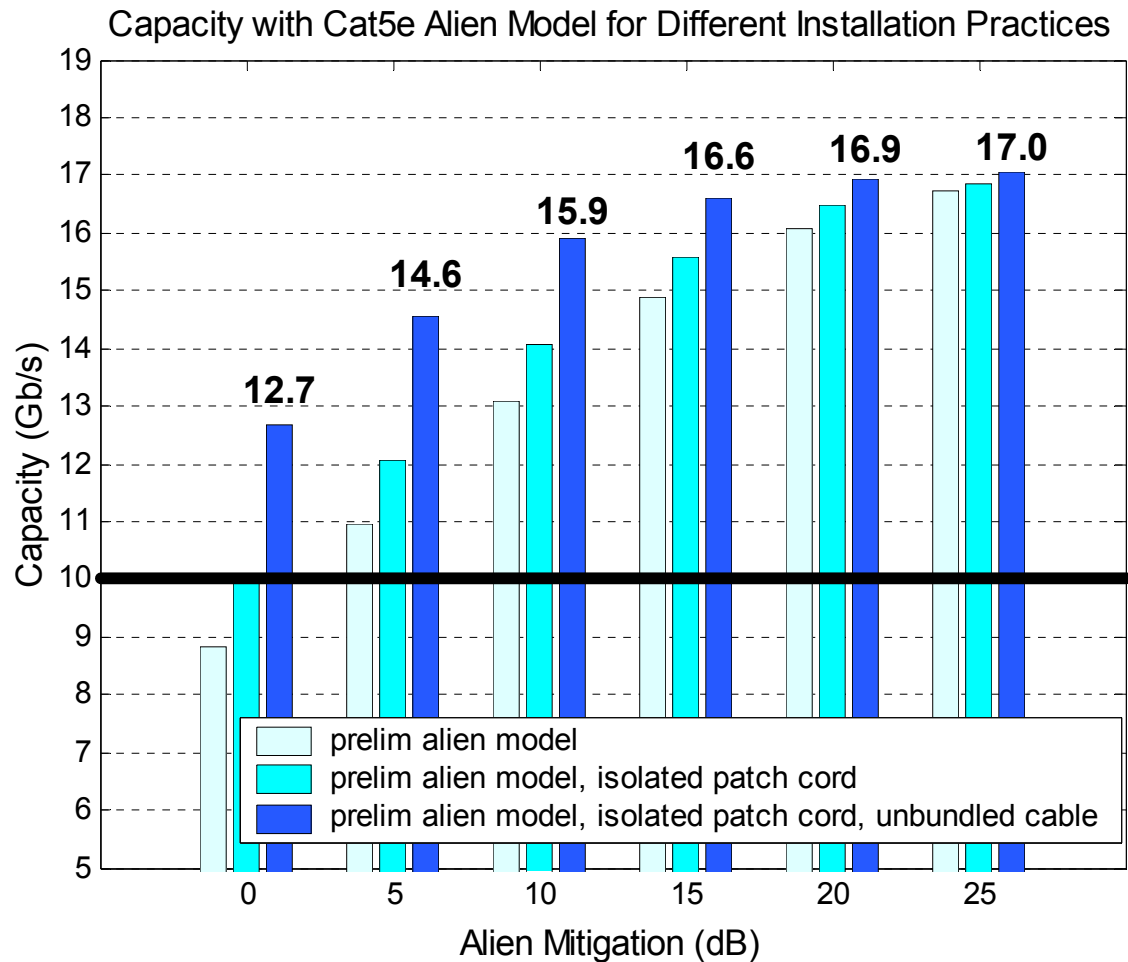
Simulation Summary

Slicer SNR Gain

	Loosely Bundled	Tightly Bundled
Pair1	3.1dB	4.2dB
Pair2	6.4dB	5dB
Pair3	4.6dB	3.6dB
Pair4	6.2dB	4.4dB

Capacity for Different Configuration Options

"Alien Crosstalk Measurements and Performance Under Different Installation Practices," Pagnanelli, May 2003



Conclusions

- **Correlation does exist**
- **Techniques do exist to provide receiver based alien mitigation of 3-6 dB.**