

SAS-2 10m Cable Results (Stateye v5 Analysis)

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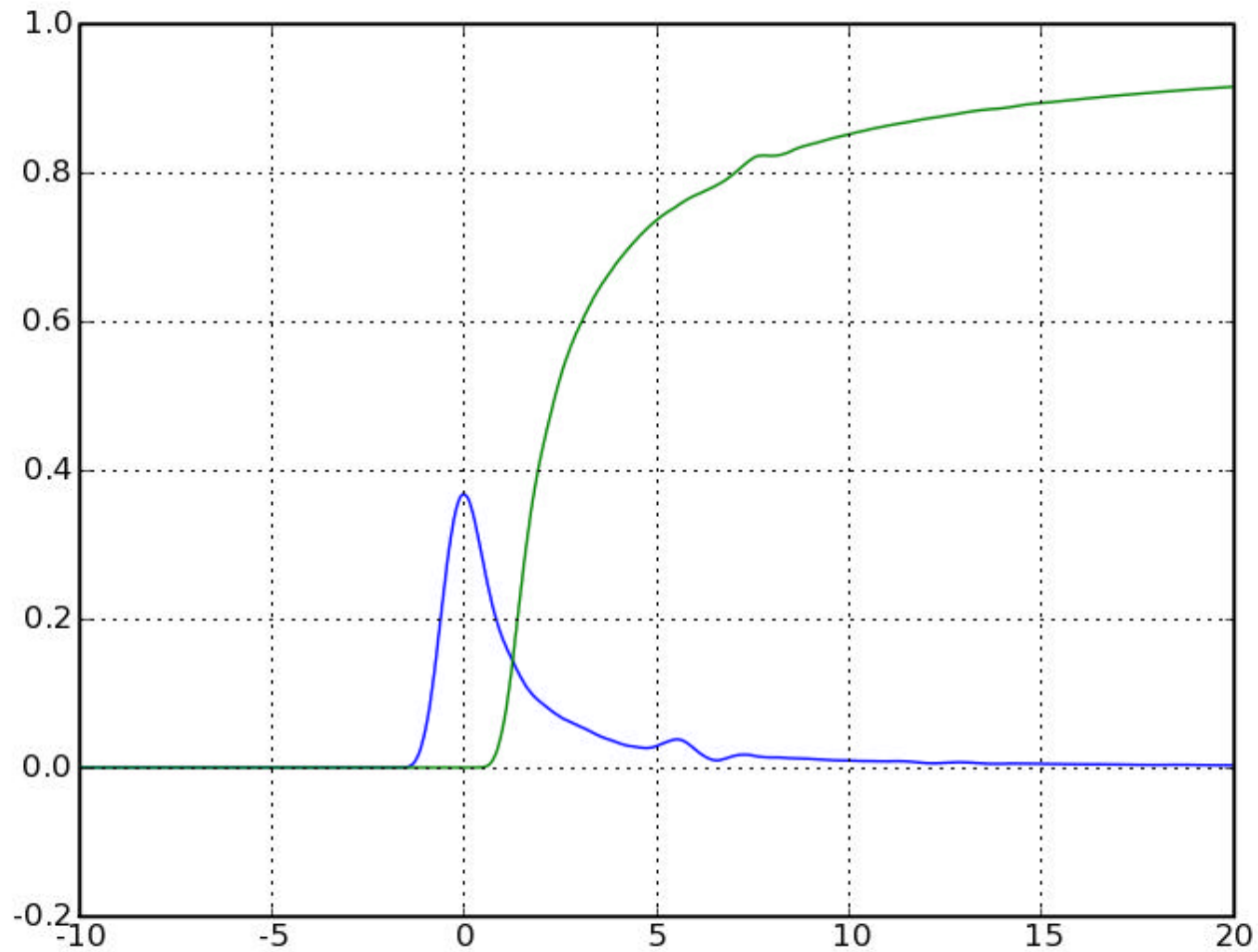


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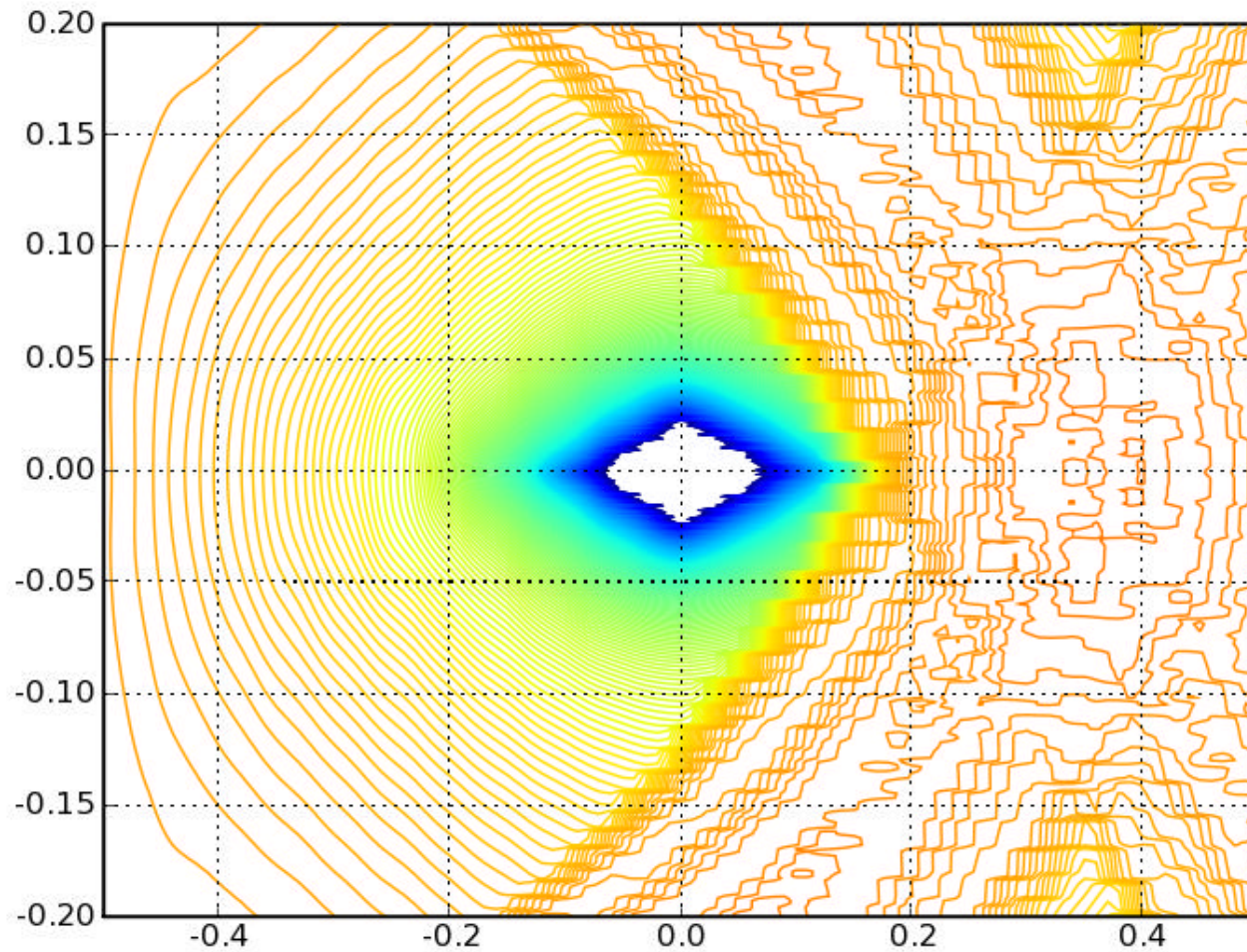
Setup

- v5 stateye engine v070908_2
 - scrambled results are 100% correlated to v4
- 0.01UI Time sweep resolution
- 4001 bins vertical resolution
- 1Vpkdiff, 2Vppdiff input signal
- $DJ=0.18UI_{pp}$, $RJ=0.011UI_{rms}$ ($0.15UI_{pp}@1e-12$)
- Contour measured to $1e-15$ BER
- 10m cable cascaded with transmitter and receiver model
 - 1MHz step file used
 - small error in causality fixed

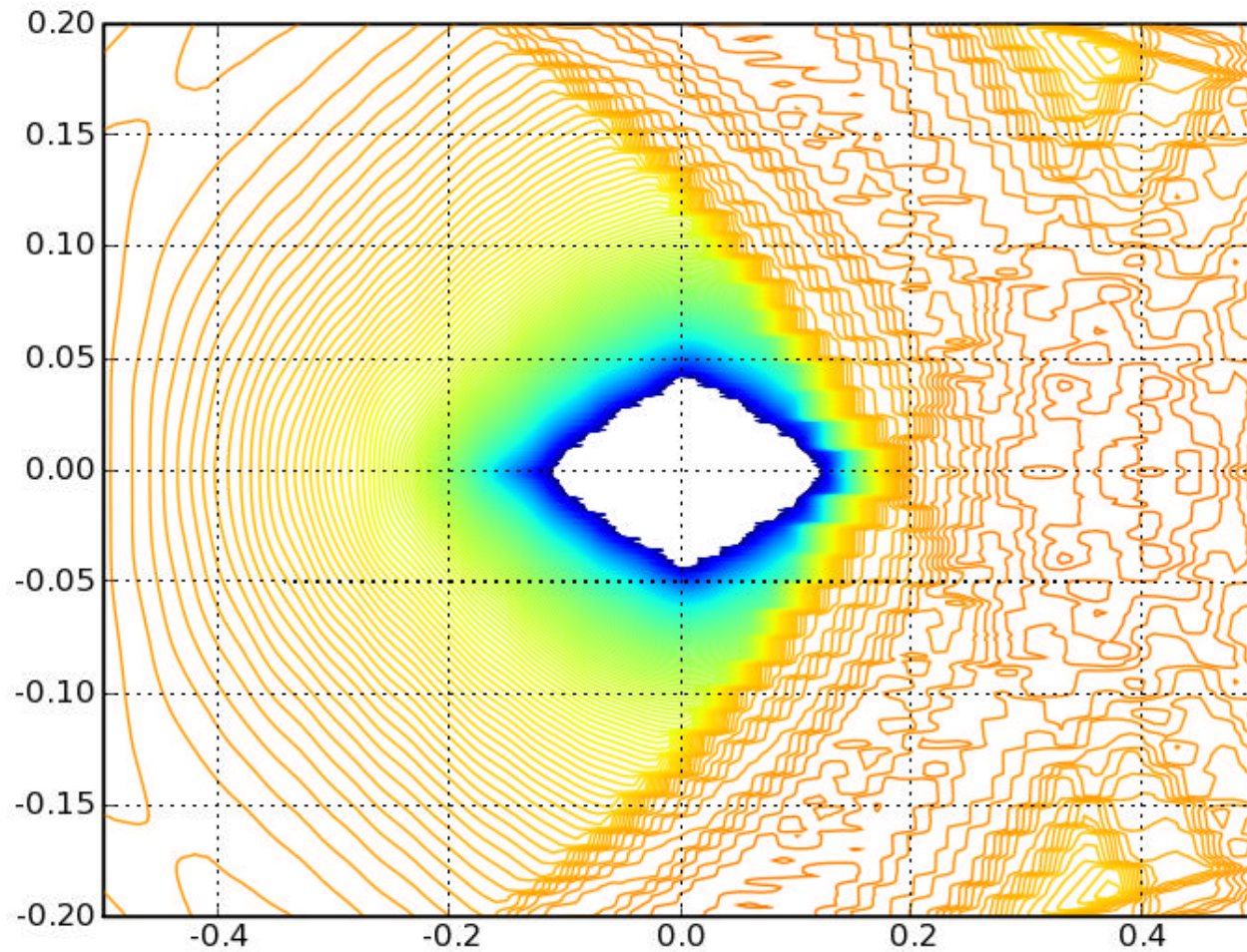
Pulse/Step Response



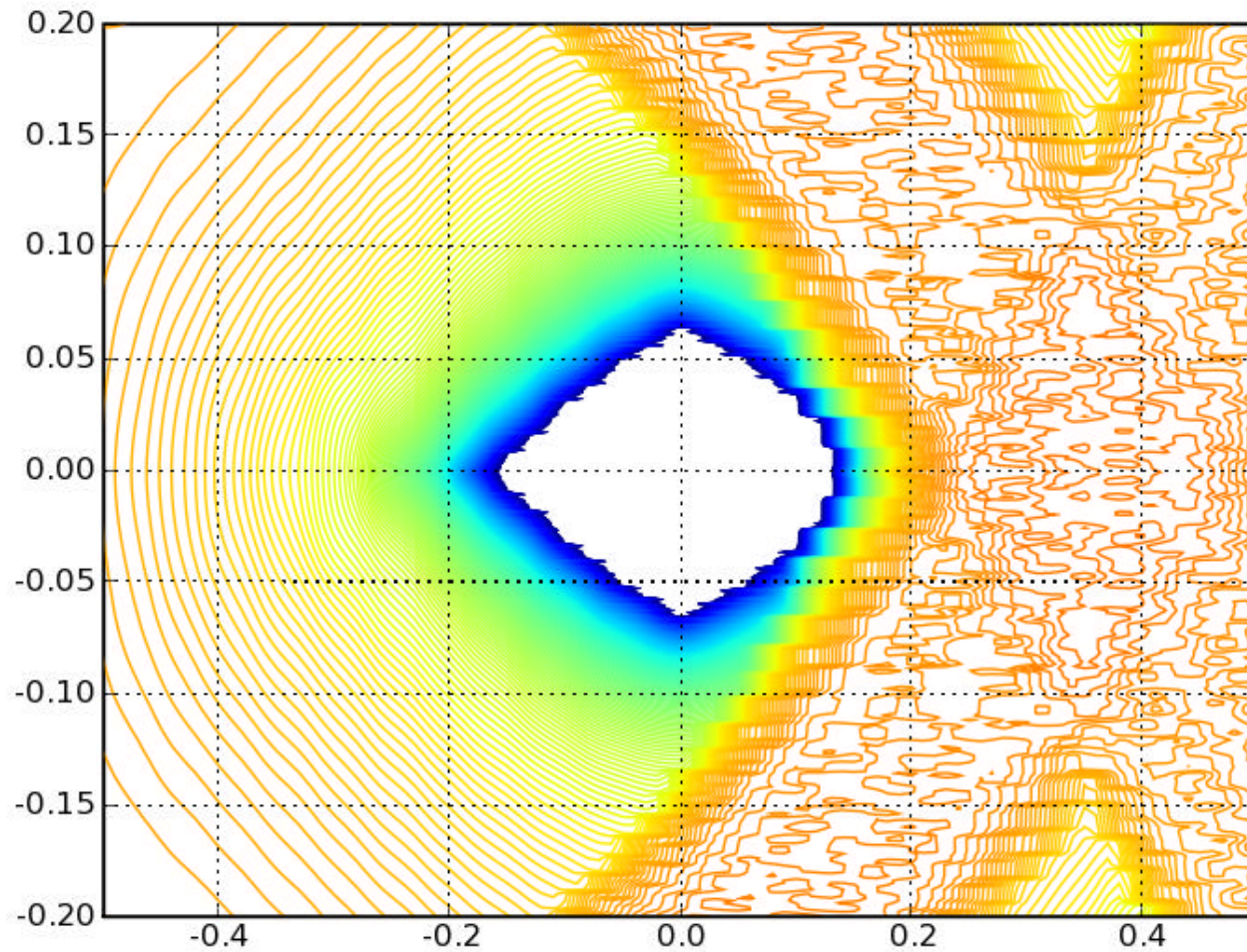
Scrambled, 2dB, 2tap



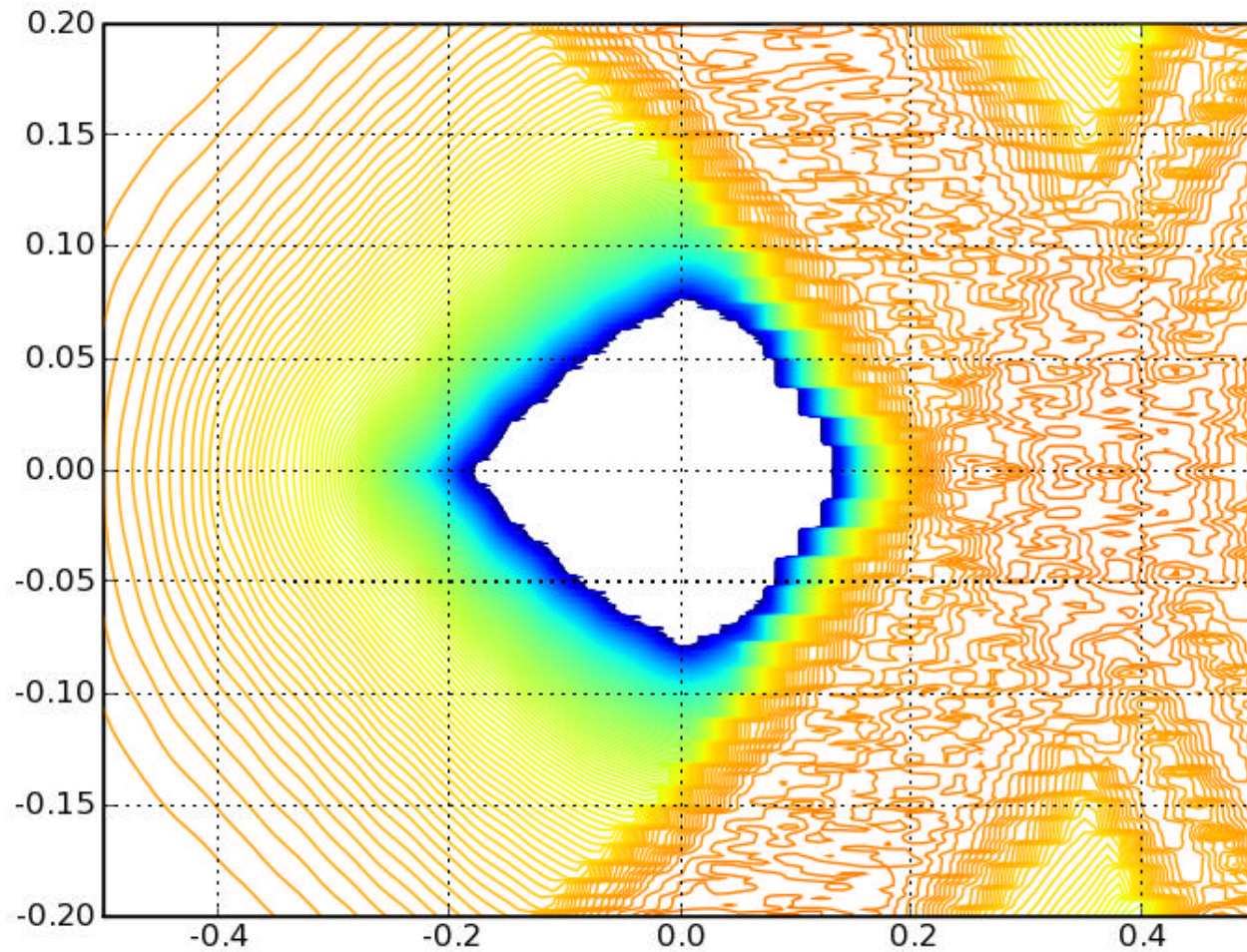
Scrambled, 2dB, 3tap



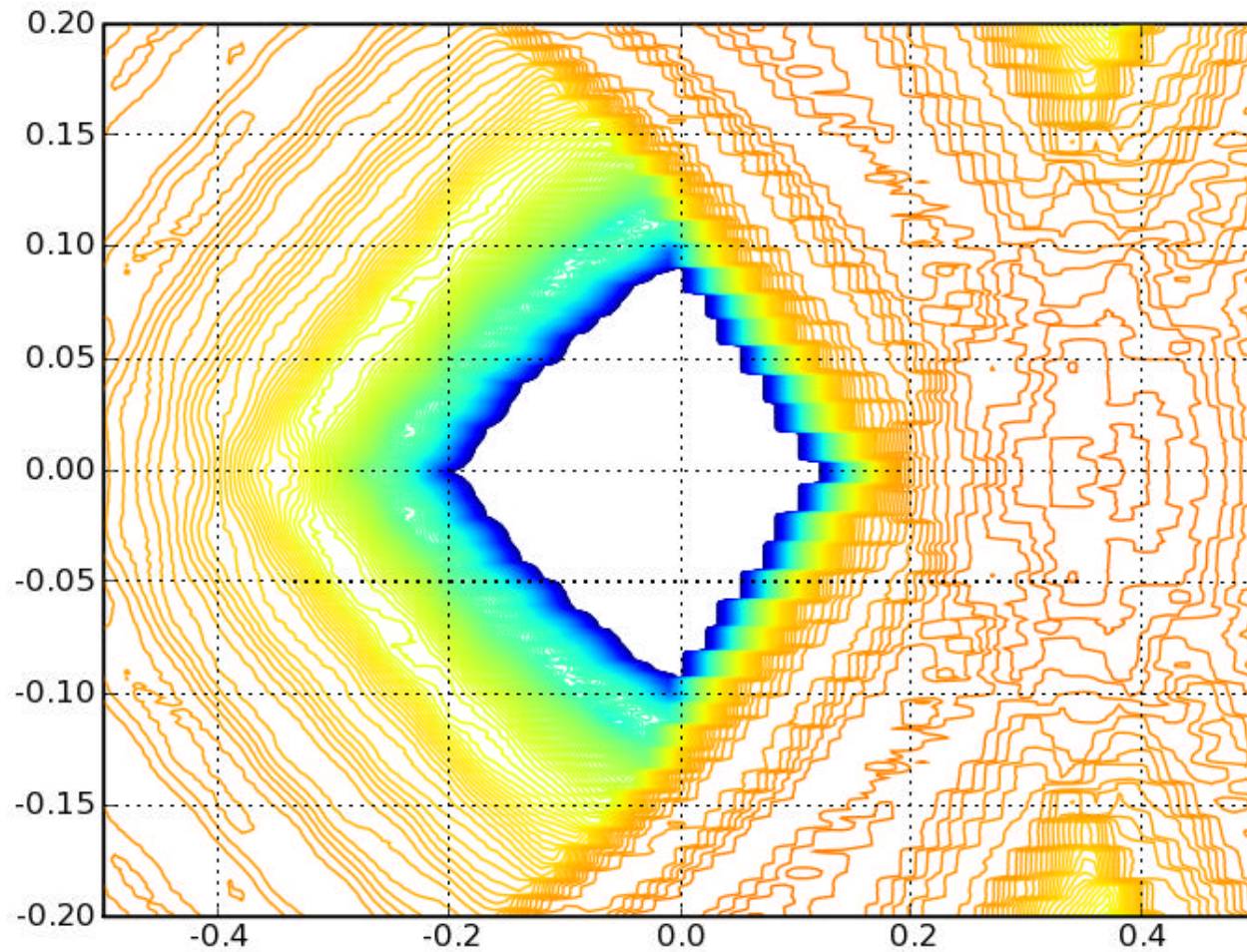
Scrambled, 3dB, 2tap



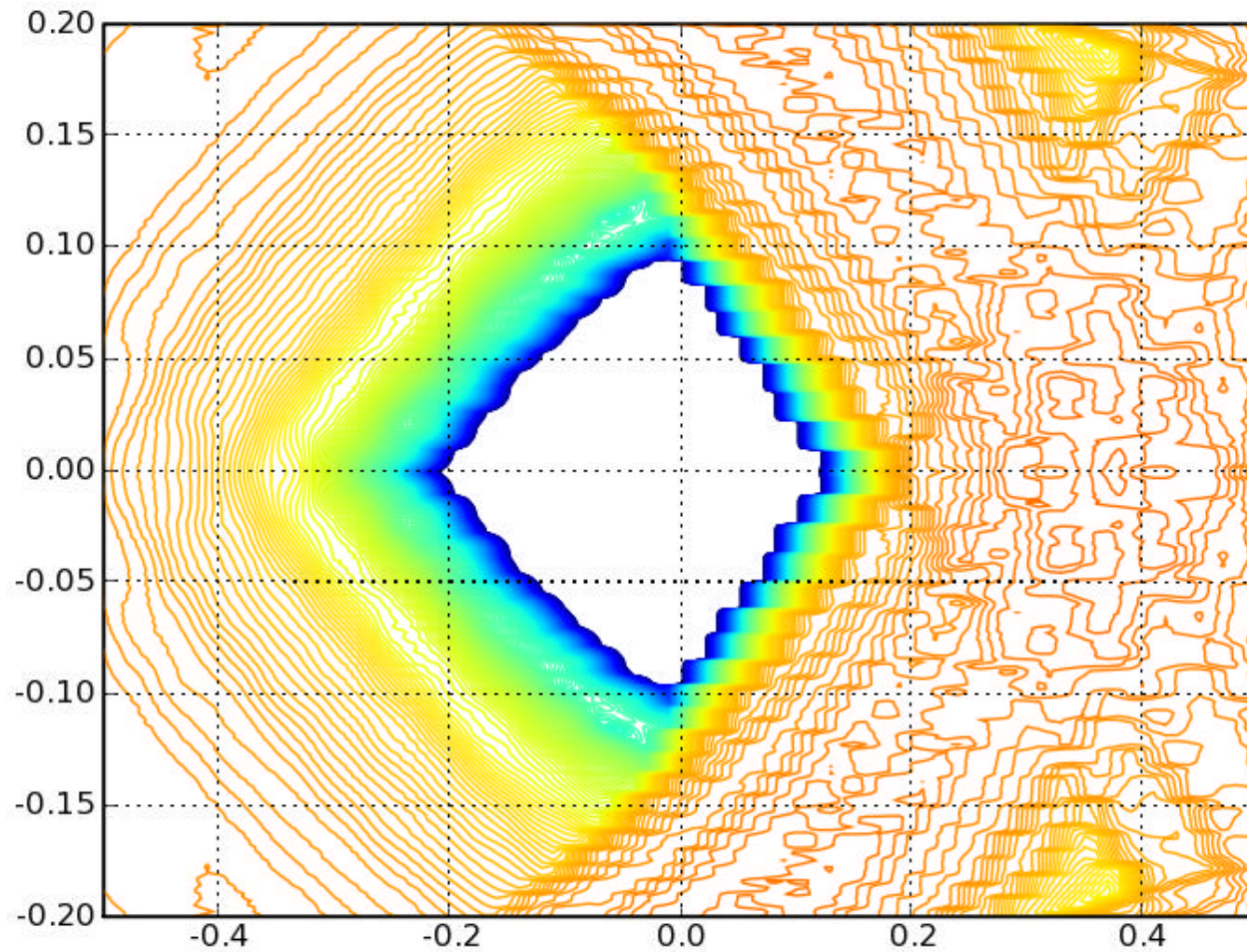
Scrambled, 3dB, 3tap



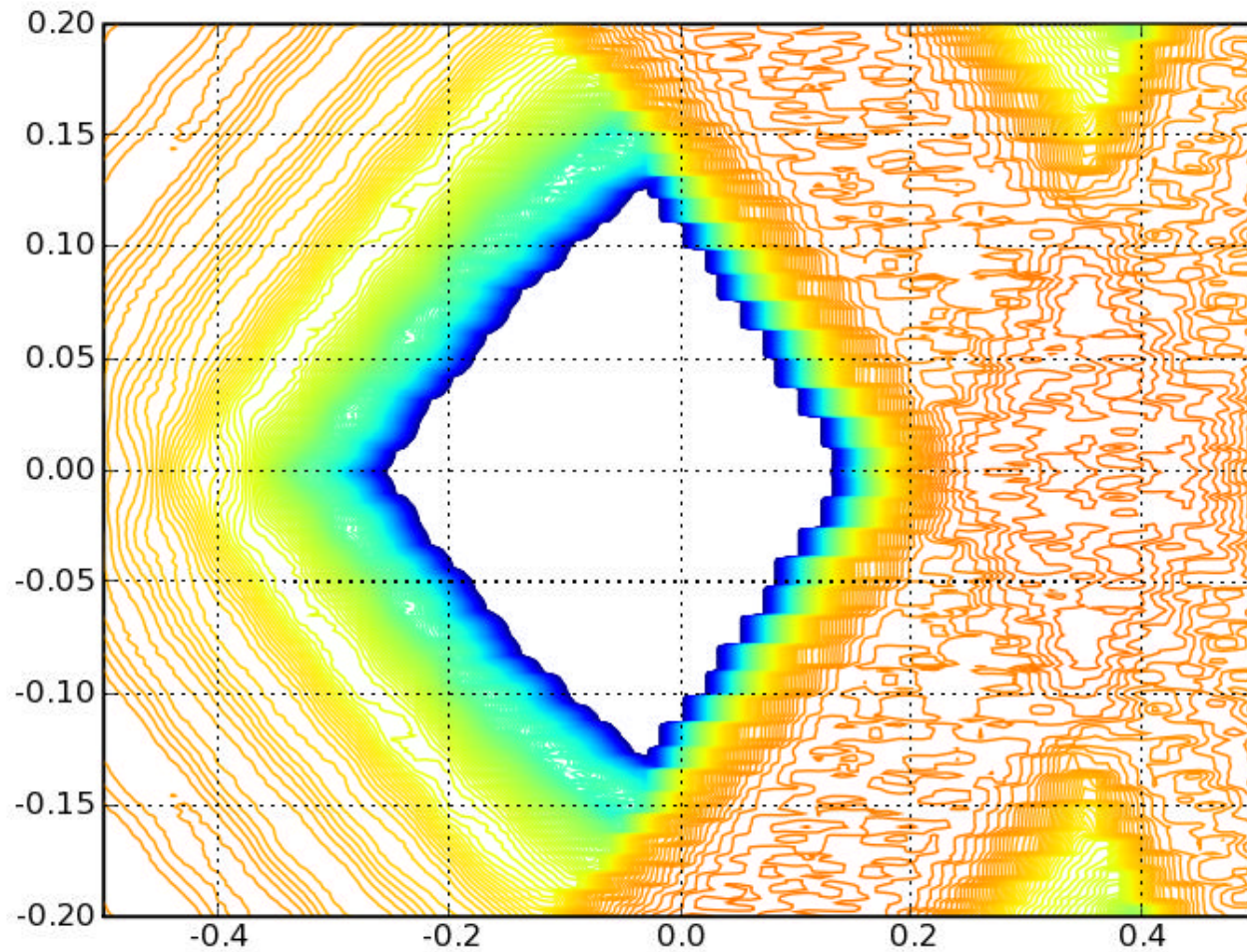
8b10b, 2dB, 2tap



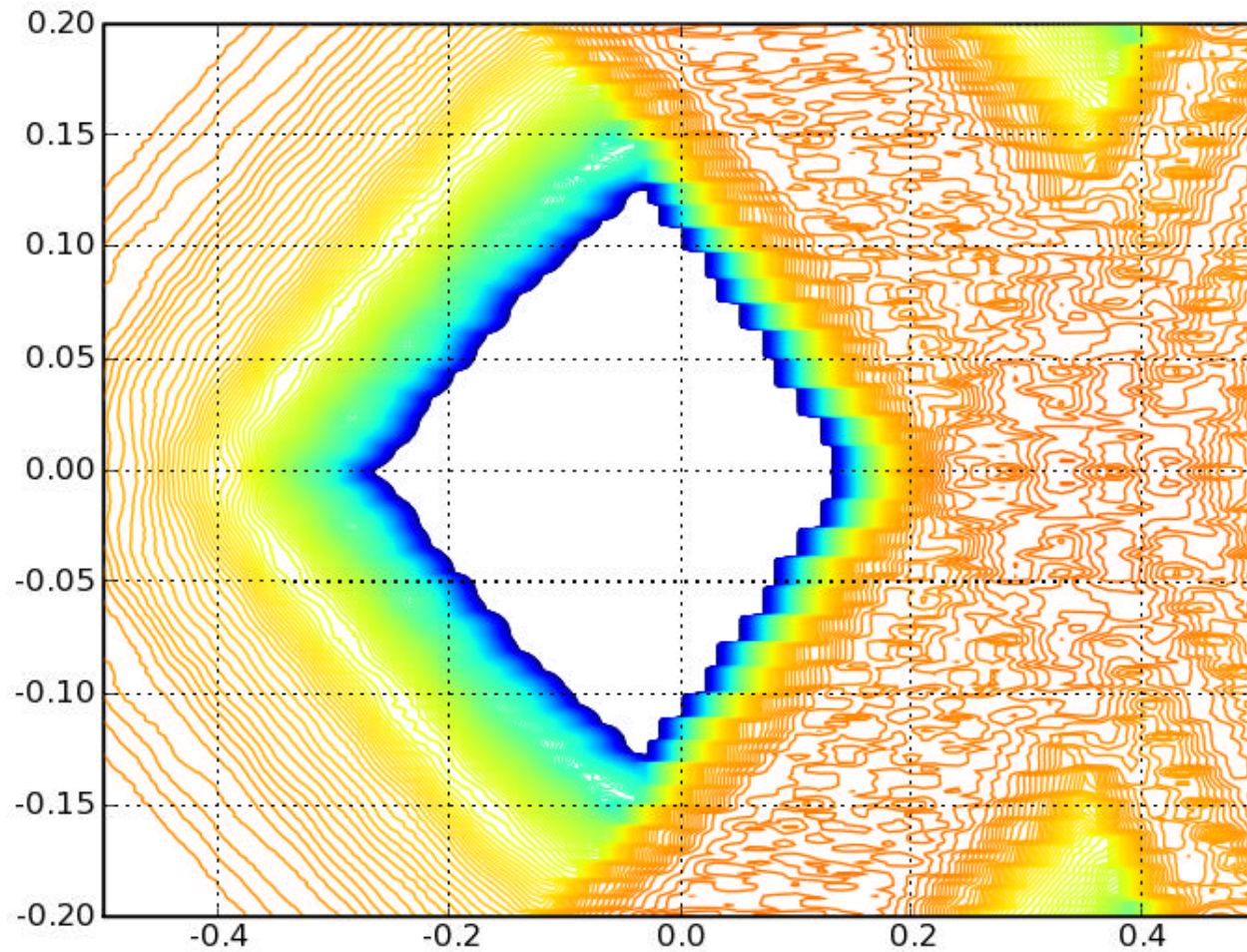
8b10b, 2dB, 3tap



8b10b, 3dB, 2tap



8b10b, 3dB, 3tap



Summary

transmitterId	emphasis		receiverId	ber	dfe taps Number	Tx Jitter		scrambled		8b10b	
						jitterDj	jitterRj	eye Opening		eye Opening	
						pp	rms	Stateye amplitude	Rx Eye mVppdiff for 1Vppdiff Tx	Stateye amplitude	Rx Eye mVppdiff for 1Vppdiff Tx
SAS6G_Tx_2dB	0.9	-0.1	SAS6G_Rx_dfe2	1.00E-15	2	0.180	0.011	0.029	28.8	0.090	90.0
SAS6G_Tx_2dB	0.9	-0.1	SAS6G_Rx_dfe3	1.00E-15	3	0.180	0.011	0.065	65.4	0.120	120.0
SAS6G_Tx_3dB	0.85	-0.15	SAS6G_Rx_dfe2	1.00E-15	2	0.180	0.011	0.043	43.2	0.090	90.0
SAS6G_Tx_3dB	0.85	-0.15	SAS6G_Rx_dfe3	1.00E-15	3	0.180	0.011	0.077	76.5	0.120	120.0

Conclusion

- 8b10b is giving a much larger improvement in eye opening as previous expected
- 2dB to 3dB emphasis increase, is not bringing any benefit. Exact reasoning under investigation
- 2 taps would probably be sufficient with 1000mV transmit swing, 3 taps gives more margin for further effects, e.g. crosstalk

CEI-6G Comparison Point

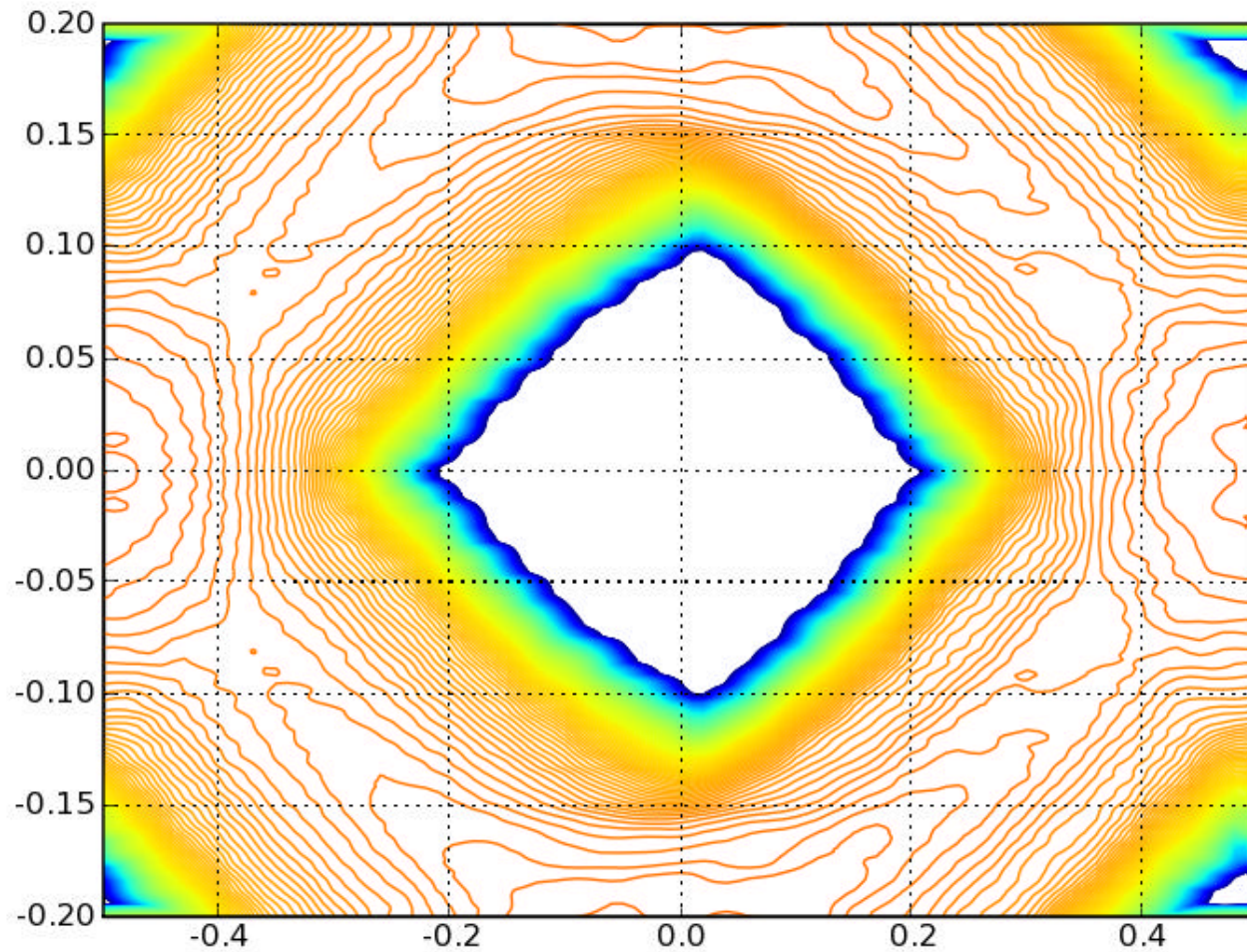
- Reference Transmitter
 - 800mVppdiff maximum de-emphasized transmit amplitude
 - $DJ=0.15UI_{pp}$, $RJ=0.15UI_{pp}@1e-12$
 - 6.375Gbps
 - upto 6dB de-emphasis
 - 8dB Return Loss
- Reference Receiver
 - 5 tap DFE
 - 8dB Return Loss
- Post equaliser eye opening must be
 - 0.40UI
 - 100mVppdiff

Consistency Check

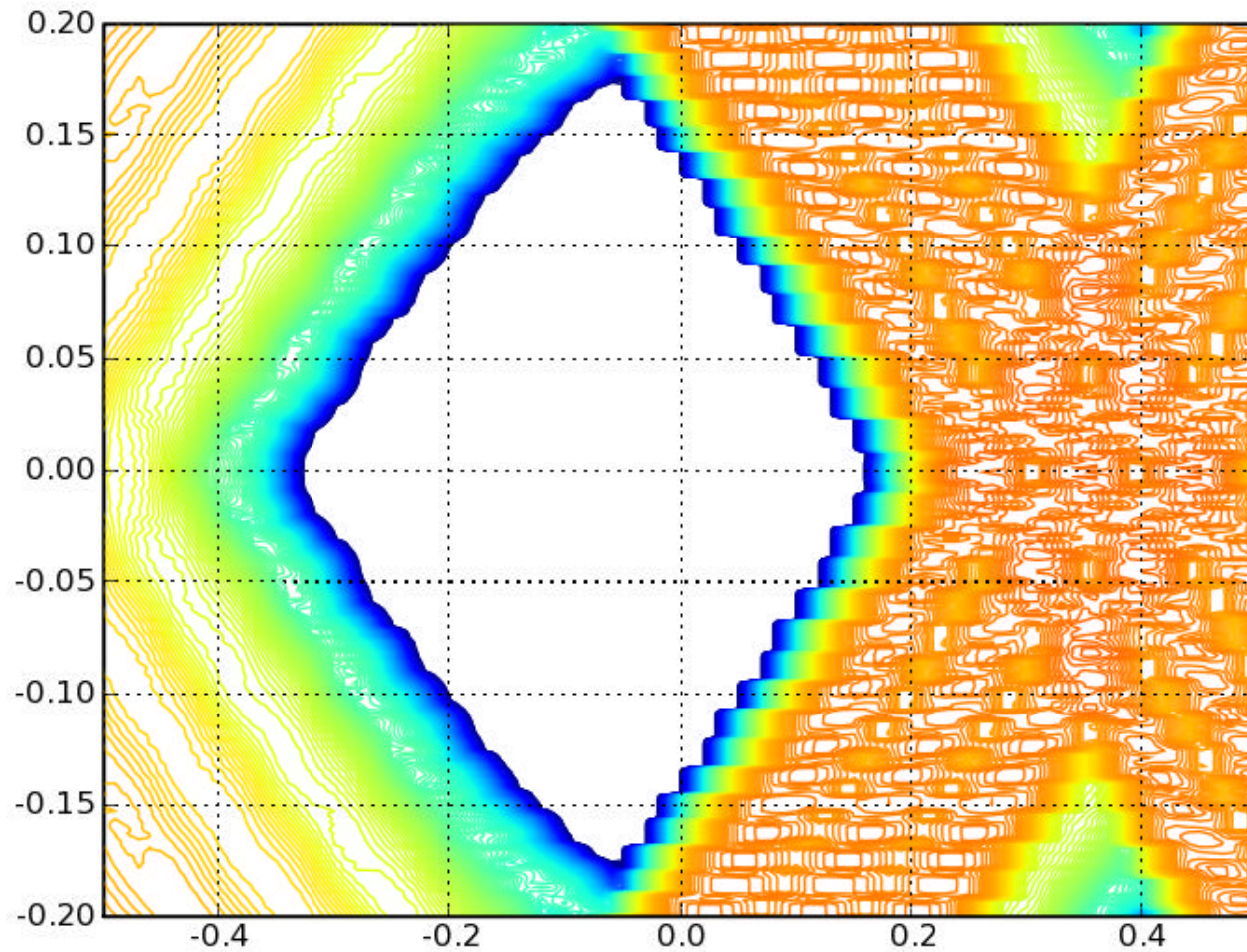
Results verifying the correct behavior of v5



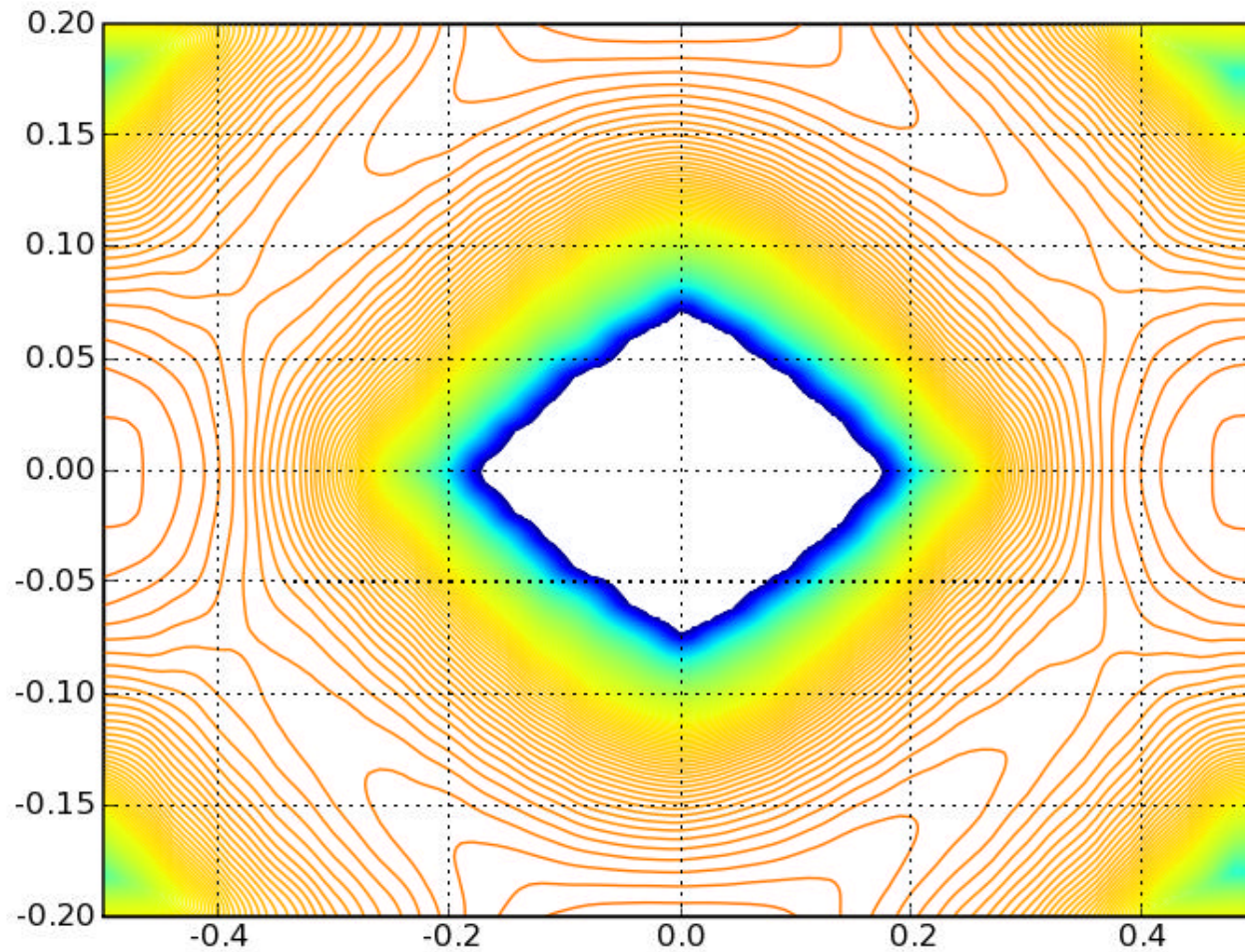
Never stop thinking



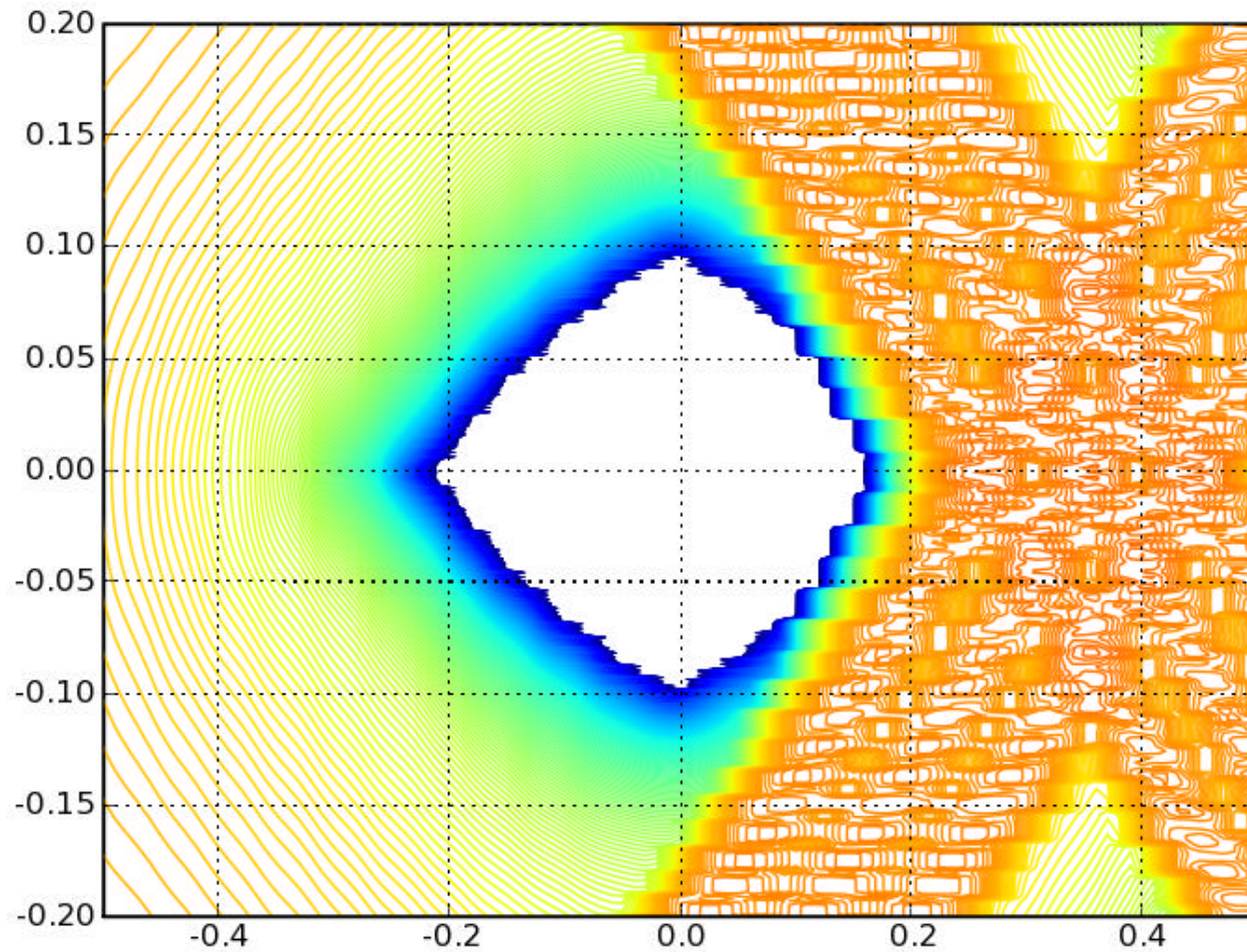
8b10b, 5tap



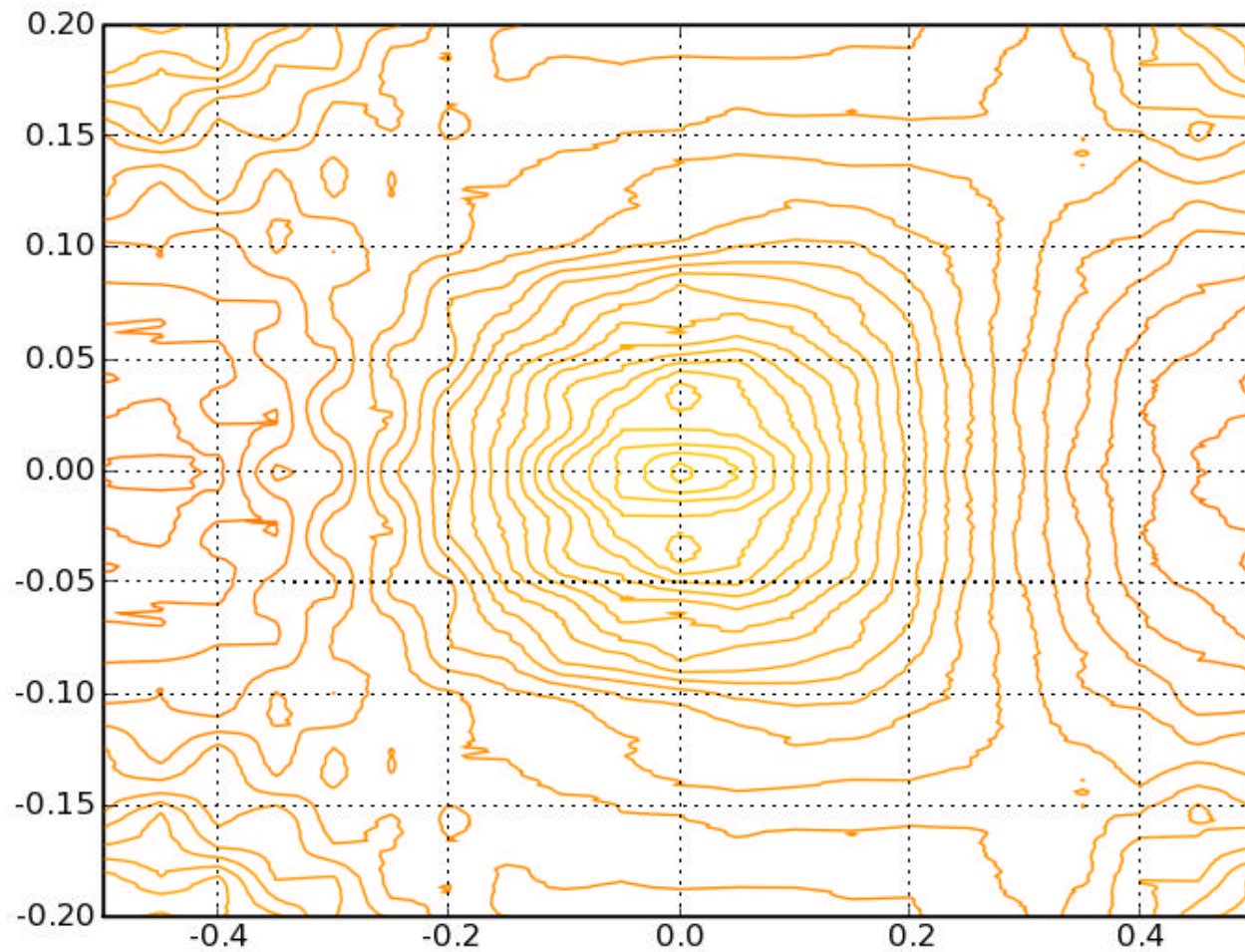
Scrambled, 8dB



Scrambled, 5tap



8b10b, 2dB



8b10b, 3dB

