The University of Chicago

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- Performed crosstalk test on two 12-ft long, cable assemblies, proposed for CsI:
 - 9 Shielded Parallel Pair 28 Awg Stranded P/N: 166-2899-936 by Amphenol Spectra-Strip;
 - 12 Shielded Twisted Pair 26 Awg Stranded P/N: 517690 12PR 26AWG by Alpha Wire;
- Cable Assemblies manufactured with 78-Pin Positronic Connectors at one end and LEMO at other.
- Used 14-Bit ADC Board to record crosstalk signals on channels: 0,2,4,6,8,10,12,14,15, via VME readout.
- Board was used in free-run mode with no trigger, and 2,000 samples per test.
- Aggressor signals similar to the PMT pulses were applied in two ways:
 - Single-Ended line drive using LeCroy428S;
 - Differential line drive using an ad-hoc circuit with AD8139 (1Vpp-differential signal).
- Aggressor signals were applied only to one line at a time, with other lines terminated;

aggressor: ch4; single ended line drive with LeCroy428S; not twisted shielded pairs cable.

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Parallel-Pair Cable – Single Ended Drive: Vct ~ 250 LSBpp; aggressor: ch4; single ended line drive with LeCroy428S; twisted shielded pairs cable



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Twisted-Pair Cable – Single Ended Drive: Vct ~ 60 LSBpp;

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aggressor: Ch2; diff line drive with AD8139, not twisted shielded pairs cable

aggressor: ch2; diff line drive with AD8139; twisted shielded pairs cable



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Twisted-Pair Cable – Differential Drive: Vct ~ Noise Level;

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Parallel-Pair Cable – Differential Drive: Vct ~ 40 LSBpp;

Note: This is the max crosstalk, recorded only in two channels.

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Same Conclusion

A multi-line cable architecture for the CsI readout may require twisted pair cables, with differential line drivers on the front end.