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A concept for power cycling the electronics of CALICE-AHCAL with the train structure of ILC

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Calorimeters, like CALICE-AHCAL, aiming for particle flow algorithms need a high granularity readout in all three dimensions. That requires electronics to be integrated into the detector volume with 1000 channel/square-meter. To keep the mechanics easy and homogeneous the heat should be conducted just by the steel of the absorber layers. Therefore a heat production of 40micro-watt per channel is requested. It can only be reached by switching the current sources in the readout ASIC's off for 99% of the time, when no bunches are delivered by ILC. The electronics design will keep the high frequency components of the switched currents locally by adequate design of the PCB and local discrete capacitors. At the end of each readout layer more space is available to stabilize the voltage, place more and larger capacitors and install circuits for filtering. This electronics is supplied by long cables from instruments located in the electronics rooms of the experiment. With the charge storage at the layers and galvanic isolation of the supply instruments it will be reached, that on the cables currents and voltages varies only with low frequencies, so that the disturbance to other subdetectors is minimized.

The talk will describe the impacts and proposed solutions for all stages of the chain from the detector in the active volume to the external supply-units. Simulation and first measurements will demonstrate parameters reached by that concept.

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