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Towards a 10 kg Skipper-CCD detector: the multiplexing analog electronics for the OSCURA experiment

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We present a multiplexed analog readout electronics system for Skipper-CCDs. The system allows for sub-electron noise-level operation while maintaining a minimal number of acquisition channels. In addition, it requires low-disk storage and low-bandwidth data transfer with zero added multiplexing time during the simultaneous operation of thousands of channels. We describe the implementation and results of this system in a new instrument composed of a large number of sensors operated with a two-stage analog multiplexed readout scheme. The instrument, which can hold up to 256 Skipper-CCDs, is a part of the R&D effort of the OSCURA experiment.

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