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New de Haas-van Alphen effect measurement electronics PATRICK ROURKE, ALIX MCCOLLAM, STEPHEN JULIAN, University of Toronto — We have implemented a new data collection infrastructure for measurements of de Haas-van Alphen oscillations in metals. Traditionally, such measurements required large banks of costly lock-in amplifiers, in order to measure on several harmonics of a fundamental excitation frequency at once for a given crystal sample. By moving to a high-quality analog-to-digital-converter/software lock-in algorithm set-up we are able to realize significant improvements in parallel data collection, configurability, data quality and cost. These performance gains will be illustrated through examples of measurements we have performed on various strongly correlated electron systems.

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