

RADIO ASTRONOMY SIGNAL PROCESSING INSTRUMENTATION AND CASPER

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Why do radio astronomers need spectrometers, correlators, beamformers, and pulsar/frb/seti machines? How do they work? What architectures and technologies are useful? How can you design and build these instruments? The CASPER collaboration has developed open source hardware, software, GPUware, FPGA gateway, and architectures for radio astronomy instrumentation. CASPER instrumentation is utilized mostly for radio astronomy, but also for physics, medicine, genomics, and engineering. Dan will review CASPER hardware and libraries, and discuss architectures for flexible general purpose scalable and upgradable instruments. Dan will also speculate on what kind of instruments the radio astronomy community could build in 10 and 20 years. Open source hardware, software, libraries, tools, tutorials, training videos, reference designs, and information on how to join the collaboration are available at <http://casper.berkeley.edu>