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| ###### | ###### | ###### | ###### | ###### |
| Not started | Paused | Working on | Almost finished | Done |

* Motivation
  + Price comparison: Tek AWG + Alazar v.s. ZCU216
* Overview
* Firmware
  + overview
  + Vivado
    - export & re-create vivado block design
    - generate bitstream & load with pynq
  + Ip
  + bd
* Software
  + overview
  + Experiment program coding basics
    - Initialize(), Body(), config, declare\_readout(), acquire(), etc
  + ~~Some important python classes~~
    - ~~Pynq: MMIO, Overlay, DefaultIP~~
    - ~~Qick’s python lib: QickSoc, QickConfig, QickProgram, AveragerProgram~~
* Hardware
  + Components
    - Xm655 add-on card, 10MHz Rubidium clock, Local oscillator - sgs100a, Amplifier, mixer, splitter, DC-block, attenuator.
  + Signal integrity debugging
    - Sampling & re-construction (alias, images)
    - Rf component’s non-linearity (harmonics, intermodulation)
  + Frequency standard synchronization
    - ZCU PLL settings & sync with 10MHz Rubidium clock
    - Random phase after direct output and down-convert with sgs100a.
  + DAC gain & ADC level to dBm conversion (calibration table)
* Experiment
  + Sinica-5q measurement
    - Setup
    - TWPA oneshot readout
    - Multiplexed readout
    - Quantum process tomography
    - Comparison with r&s VNA on oneTone measurement