Introduction

- Lolin S2Mini, pins soldered on $4
- Half-breadboard $5
- Case (depends on project) $2 for filament
- One wire from DAC to ADC
- 1 kΩ resistor
- **Total**: $11

Alpha Particle Counter

- Lolin S2Mini $4
- Half-breadboard $5
- Case $2 for filament
- S1223-01 photodiode with glass window removed.
  - $10
- MCP6022 dual op amp $1.50
- 1 uF tantalum capacitor
- Two 100 nF ceramic capacitors
- Resistors:
  - 1.5 kΩ
  - 10 kΩ
  - 100 kΩ
  - Two 10 MΩ
- 22 AWG wire
- Lego
  - One 2x8 block (or two 2x4 blocks)
  - One 2x4 block
  - One 1x2 block
  - Three 1x2 plate
  - One 1x2 cap (or plate)
- An alpha source. I use an ^{241}Am source used in smoke detectors. They have about 1 μCi. $10
- **Total**: $33

Conductance

- Case, 3D printed – $2 of PLA filament.
- Half breadboard – $5.
- Lolin S2Mini microcontroller board – $5.
- Thermocouple breakout board, MAX31855 – $15.
- Type K thermocouple – $10.
- 100 Ω resistor.
- Sample resistor <= 100 Ω on long wires
- Hook up wire, 22AWG Solid Core.
- **Total**: $56

Laser Beam Profiler

Six Each:
- Lolin S2Mini $4
- Half-breadboard $5
- Case (depends on project) $2
- 3D printed translation stage $3
- 3D printed spacer
- Stepper motor $5
- AdaFruit VEML7700 breakout board $5
- Two #4x ¼“ screw for motor mount
- Four screws for mounting light sensor board
- One M3 x Xmm hex bolt (drive) and Nut
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- AdaFruit Motor FeatherWing $22
- Hook up wire
- Four M-M jumper wire
- Four M-F jumper wire
- Two rubber bands
- **Total** $46

Tools, etc.
- Very small Phillips screwdriver
- Small Phillips screwdriver PH-1
- Super glue