



Fig. E.1: Schematic of the wireless torque transducer box, excluding voltage regulation/power conditioning circuitry. The strain gauge sensor is amplified by a Linear Technology LTI167 instrumentation amplifier of gain ~ 100 and digitized with a Microchip MCP3553 22 bit ADC. The conversions are controlled by an Arduino microcontroller board running firmware written by the author, `SPI_ADC_Xbee.v2.0.pde`, published below and available for download at http://wave.umd.edu/axlcode/SPI_ADC_Xbee.v2.0.pde This code reads samples and transmits them in ASCII signed integer format via a Digi XBee 2.4GHz wireless serial connection to a computer in the lab frame.