

## **Single-Photon Avalanche Photodetector:**

### **Control Digital potentiometer with Arduino Uno:**

To control the input voltage, we used MCP4151. we are controlling 5v input from Arduino uno.

In this circuit, we connect pin 1(MCP4151), the CS pin, to digital pin 10 on the arduino.

We connect pin 2, SCK, to digital pin 13 on the arduino.

We connect pin 3, SDI/SDO, to digital pin 11 on the arduino.

We connect pin 4, GND, to the ground terminal on the arduino.

We connect pin 5, to +5V.(arduino)

We connect pin 6, to A0 (to check the analog output on serial monitor Arduino)

After complete the setup of the circuit & install the code on Arduino uno, when we provided 5v from Arduino to MCP4131, with load (as a led) it provides me 4.90V at a step of 255. When we tried to change the steps randomly from code, the voltage was also changed from 0 to 4.90V. Without the load, it's provided us with 4.97V. 0.03V was lost because of wire resistance. We check it from the Serial monitor and also using the Multimeter.

The MCP4131 changes resistance in a total of 256 steps, from 0 to 255. When we put the value from 128, it feels like the LED is turn off. After that when we put the value 160 to 250, it feels like the LED is turn on from dim to more brighter.