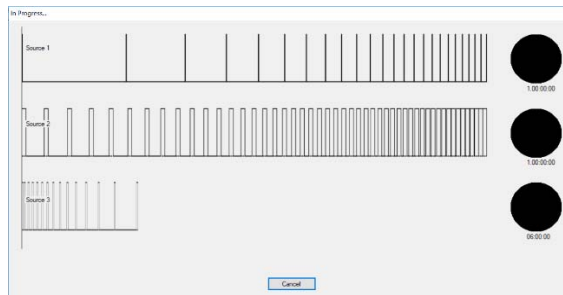


**Supplementary figure 1.** Multiple Fractions tab. **Panel A:** Graphic user interface for delivering multiple fractions of alpha particles equally spaced in time. **Panel B:** Progress window.

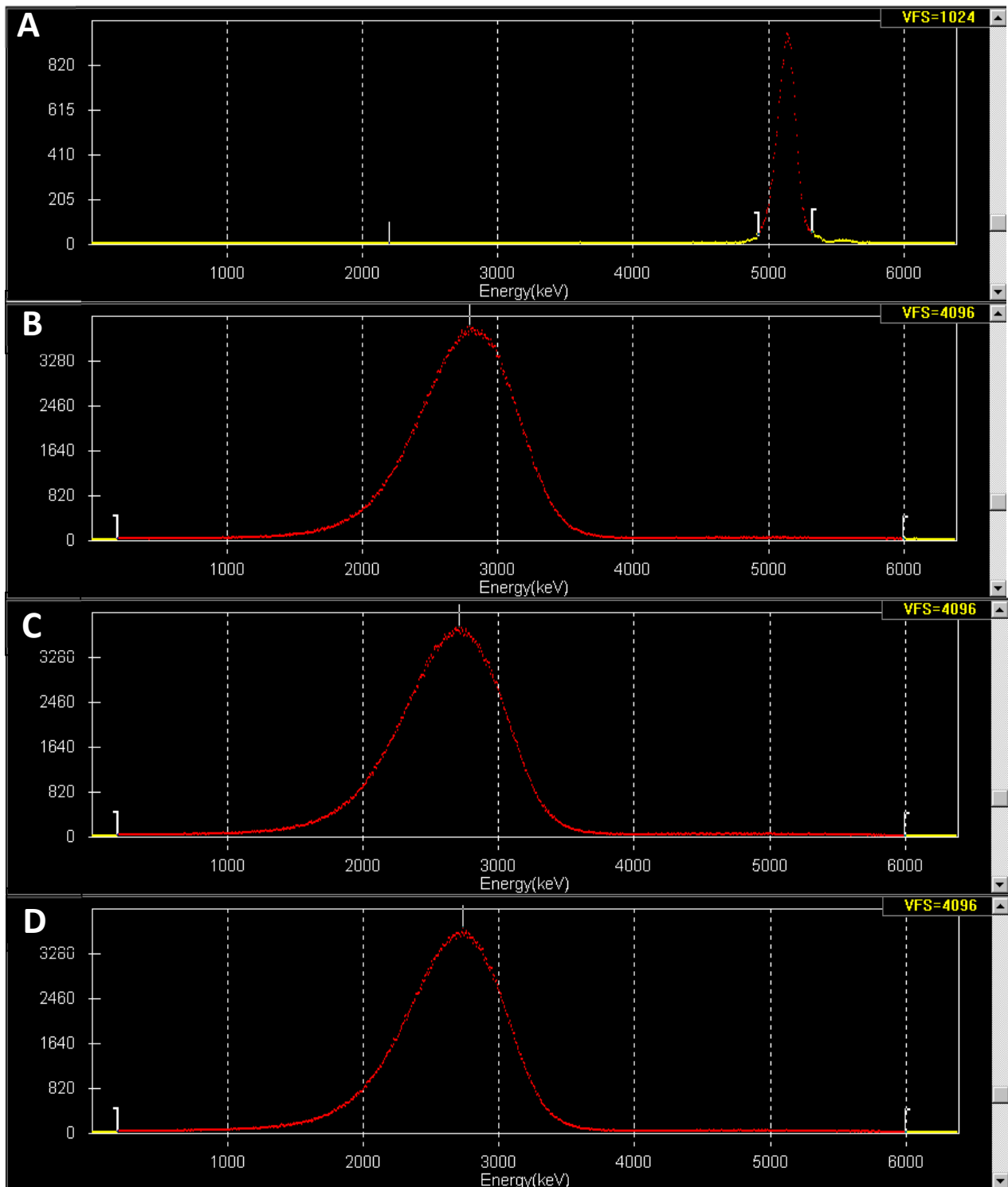
A



B



**Supplementary figure 2.** Exponential tab. **Panel A:** Graphic user interface for delivering exponentially increasing or exponentially decreasing dose rates of alpha particles. **Panel B:** Progress window.



**Supplementary figure 3.** Alpha particle energy spectra acquired with a PIPS detector for: **A)**  $^{239}\text{Pu}$  calibration source in a vacuum, and at the alpha irradiator exit windows **B)**  $^{241}\text{Am}$  Source 1, **C)**  $^{241}\text{Am}$  Source 2, **D)**  $^{241}\text{Am}$  Source 3. The centroids of the spectra at the exit windows are 2.8, 2.7, and 2.7 MeV, respectively.

**Supplementary Table 1. Parts for Alpha Irradiator Shutter Control**

- PART#1. Arduino Uno R2  
[https://www.amazon.com/gp/product/B00BT0NDB8/ref=oh\\_aui\\_detailpage\\_o02\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00BT0NDB8/ref=oh_aui_detailpage_o02_s00?ie=UTF8&psc=1)
- PART#2. Kootek 8 Channel DC 5V Relay Module for Arduino Raspberry Pi DSP AVR PIC ARM  
[https://www.amazon.com/gp/product/B00C8O9KHA/ref=oh\\_aui\\_detailpage\\_o00\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00C8O9KHA/ref=oh_aui_detailpage_o00_s00?ie=UTF8&psc=1)
- PART#3. SMAKN DC 24V/2A 48W Switching Power Supply Adapter 100-240 AC
- PART#4. LMB-Heeger Tite Fit Project Box Size 7"D x 5"W x 3"H [https://www.amazon.com/LMB-Heeger-Tite-Fit-Project-Size/dp/B0112S0Y7C/ref=sr\\_1\\_14?ie=UTF8&qid=1500496476&sr=8-14&keywords=interlocking+aluminum+enclosure](https://www.amazon.com/LMB-Heeger-Tite-Fit-Project-Size/dp/B0112S0Y7C/ref=sr_1_14?ie=UTF8&qid=1500496476&sr=8-14&keywords=interlocking+aluminum+enclosure)
- PART#5. Capacitor 100uF 25V (100 mfd 25V) 20% Radial, 1/4" X 1/2" (6.3X12.2mm)  
[https://www.amazon.com/105-C-Electrolytic-Capacitor-Radial-6-3X12-2mm/dp/B00J0E7FI2/ref=sr\\_1\\_1?s=industrial&ie=UTF8&qid=1500953239&sr=1-1&keywords=100uF+25V](https://www.amazon.com/105-C-Electrolytic-Capacitor-Radial-6-3X12-2mm/dp/B00J0E7FI2/ref=sr_1_1?s=industrial&ie=UTF8&qid=1500953239&sr=1-1&keywords=100uF+25V)
- PART#6. SMAKN 2 Channel 5V Relay Module with Optocoupler for PIC ARM AVR DSP SRD-05VDC-SL-c
- PART#7. FAN4EXT12 12 in 4 Pin Fan Power Extension Cable  
[https://www.amazon.com/gp/product/B0058DN7B8/ref=oh\\_aui\\_detailpage\\_o07\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B0058DN7B8/ref=oh_aui_detailpage_o07_s00?ie=UTF8&psc=1)
- PART#8. Etekcitey Power Supply 110-240V AC Input – output 9 Volt DC 650 mA  
[https://www.amazon.com/gp/product/B00BSDQVVU/ref=oh\\_aui\\_detailpage\\_o07\\_s01?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00BSDQVVU/ref=oh_aui_detailpage_o07_s01?ie=UTF8&psc=1)
- PART#9. Phantom YoYo 40P dupont cable 200mm male to female  
[https://www.amazon.com/gp/product/B00A6SOGC4/ref=oh\\_aui\\_detailpage\\_o09\\_s01?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00A6SOGC4/ref=oh_aui_detailpage_o09_s01?ie=UTF8&psc=1)
- PART#10. 5V DC 2000 mA Regulated Power Supply  
[https://www.amazon.com/gp/product/B005CVNH1Q/ref=oh\\_aui\\_detailpage\\_o07\\_s01?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B005CVNH1Q/ref=oh_aui_detailpage_o07_s01?ie=UTF8&psc=1)
- PART#11. 2 Pcs 8 Position Double Row Screw Terminal Covered Barrier Strip 600 V 25A  
[https://www.amazon.com/gp/product/B005I03W0I/ref=oh\\_aui\\_detailpage\\_o07\\_s01?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B005I03W0I/ref=oh_aui_detailpage_o07_s01?ie=UTF8&psc=1)
- PART#12. SB400 Solderable PC Breadboard, 1 Sided PCB, 483. X 76.2 mm  
[https://www.amazon.com/gp/product/B0040Z3012/ref=oh\\_aui\\_detailpage\\_o00\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B0040Z3012/ref=oh_aui_detailpage_o00_s00?ie=UTF8&psc=1)
- PART#13. SainSmart 2-Channel Relay Module  
[https://www.amazon.com/gp/product/B0057OC6D8/ref=oh\\_aui\\_detailpage\\_o09\\_s01?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B0057OC6D8/ref=oh_aui_detailpage_o09_s01?ie=UTF8&psc=1)
- PART#14. Extech 382213 Digital Triple Output DC Power Supply  
[https://www.amazon.com/gp/product/B00023RVMU/ref=oh\\_aui\\_detailpage\\_o00\\_s00?ie=UTF8&psc=1](https://www.amazon.com/gp/product/B00023RVMU/ref=oh_aui_detailpage_o00_s00?ie=UTF8&psc=1)