

# Finding Functional Approximations of the Absolute Counting Efficiencies for radon 222 and radon 220 for ESC's under certain Pressures and High Voltages

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Construction materials for equipment used in experiments contain natural radioactivity. High energy photons and beta rays towards the end of the uranium and thorium chains can act as a source of background for experiments like the original SNO experiment. To mitigate this, construction materials are required to be ultra low radioactivity materials. This requires methods to measure the radioactivity of materials. One such method is radon emanation measurements which involve an electrostatic counter (ESC) which is used to measure the number of decays of polonium isotopes from the uranium and thorium chains. Knowing the absolute counting efficiency makes it possible to find the number of a certain radioisotope originally present in a material. The aim of this summer job was to find functional approximations of the absolute counting efficiencies for ESC's for the isotopes of radon 222 and radon 220 under pressures and high voltages of 25mbar and 600V, 100mbar and 600V, and 1000mbar and 1000V.

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