



## Colorado Science and Engineering Fair

## 2024 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: Seeing Radiation To Find Out How To Block It

Finalist's Name: Jacob C Kossler

School and City: Turner Middle School, Berthoud

Sponsor's Name: John C Kossler

Category: Physics & Astronomy (PHYS)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

I am trying to find out which materials can best block radiation. This experiment involved making a cloud chamber, testing which materials can block radiation using thorium as a radiation source, and documenting the results. This could be important because it can help us create safer space suits for space walks and surviving in places with high radiation levels. I built a cloud chamber based on a design from CERN ('Conseil europeen pour la Recherche Nucleaire, French for European organization for nuclear research). I tested 3 different materials in the cloud chamber and counted the number of tracks I see in 30 seconds. When testing different radiation sources, I found that Thorium had a higher average number of tracks (Figure 2). When testing my shielding materials, my data was averaging at around 1 for all of them, except my control, which averaged around  $3 \frac{2}{3}$  (Figure 1). On average the number of particle tracks was lower on the side without the thorium rod, but not significantly (Figure 1). I believe I did not get a clear result because I didn't have a strong enough radiation source. If I were to do this project again, I would try a stronger (still safe) radiation source. I would also try a different design to better control the variables.

*I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.*

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.