

# INVESTIGATING THE DEVELOPMENT OF STEM-POSITIVE IDENTITIES OF REFUGEE TEENS IN A PHYSICS OUT-OF-SCHOOL TIME EXPERIENCE | #2005973

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## Project Description

INSPIRE aims to improve equity and diversity in physics by engaging refugee-background youth in: (1) Culturally sustaining and hands-on experience in cosmic ray research to develop students' physics and computing skills; (2) Digital storytelling; and (3) Sharing of STEM knowledge and skills with family and physicists at community science events. Across these activities the research on learning explores how students author disciplinary identities within the contexts and through the relationships afforded by the program.

## Key Achievements

### What have you accomplished to date?

- Students co-constructed: cosmic ray detectors, digital stories, and scientific posters on cosmic ray research.
- Disseminated findings related to: refugee identity, spontaneous play as disciplinary practice, a model for engaging refugee-background teens in cosmic ray physics, student learning & activities for exploring multifaceted identities, girls who thrive in Zoom, Zoom-based science learning as a 3<sup>rd</sup> space, challenges and opportunities for identity research on Zoom, supporting student choice in translanguaging, and student perspectives on differences between school and afterschool science learning.

### What have you learned?

- How to create spaces for students' multifaceted identities to be celebrated in a physics learning environment
- Connections between relationship-building and learner autonomy
- Students have varied perspectives on the term "refugee"
- Spontaneous play (while doing physics) may be a sign-post of youth culture and inclusion in the making, and a disciplinary practice
- Informal STEM educators can bridge the practice-related divide between education researchers and physicists
- Zoom-based instruction posed challenges but offered some benefits.

## Audience & Settings

**Audience:** Refugee-Background Teens, Education/Learning Sciences Researchers, Informal STEM Educators, Undergraduate Mentors, and Physicists.

**Disciplinary area:** Physics, STEM Education, Applied Linguistics/Linguistic Anthropology of Education.

**Learning environments:** University Campus, Refugee Community Center.

## Access and Inclusion

INSPIRE programming was specifically designed for refugee-background youth using a culturally sustaining framework which included the three pathways for engagement with STEM learning shared in the project description. We fostered access and inclusion by designing personally relevant, hands-on science learning activities, engaging in explicit conversations about how students were impacted by racism in formal learning environments, validating students' diverse ways of being that they brought into the learning environment (language practices, forms of play, etc.), and supporting relationship-building among students, undergraduate mentors, informal educators, and researchers.



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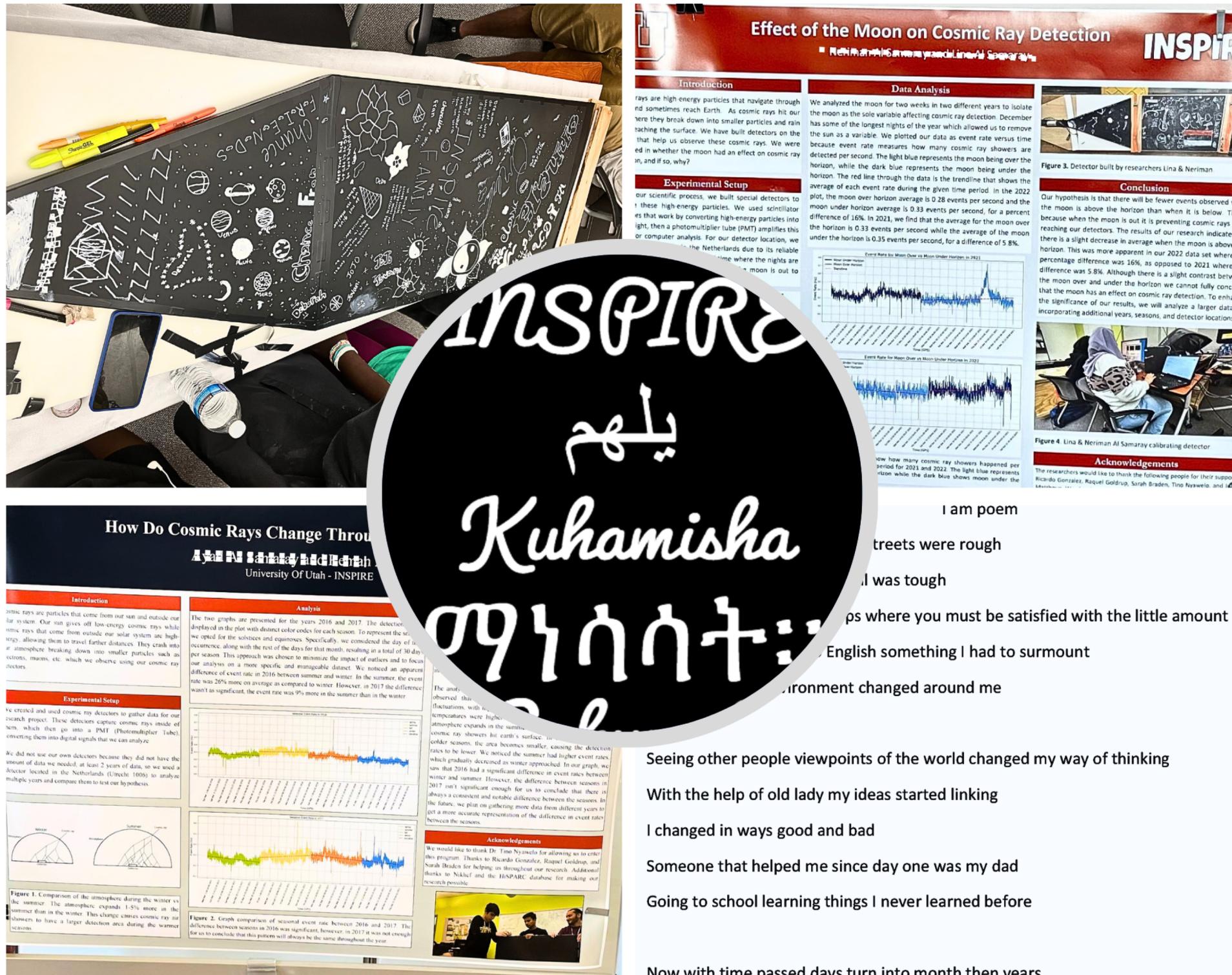


Photo Collage of INSPIRE youth science products. Top left- Cosmic ray detector designed by youth. Top right - Youth team A poster presentation with cosmic ray data Bottom left- Youth team B poster presentation with cosmic ray data Bottom right - Youth autoethnography (I am Poem) Middle - Multilingual expression of the project by youth.