



Basic Radiation Physics Preparation for Beginning Players of the DoseBusters Virtual Reality Radiation Detection Game

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Introduction and Motivation

DoseBusters is a virtual reality (VR) game that uses real time radiation simulation to create immersive training environments that are **safer** and **more accessible**. A tutorial was developed to introduce players of many backgrounds to the capabilities of DoseBusters.

Mission Relevance

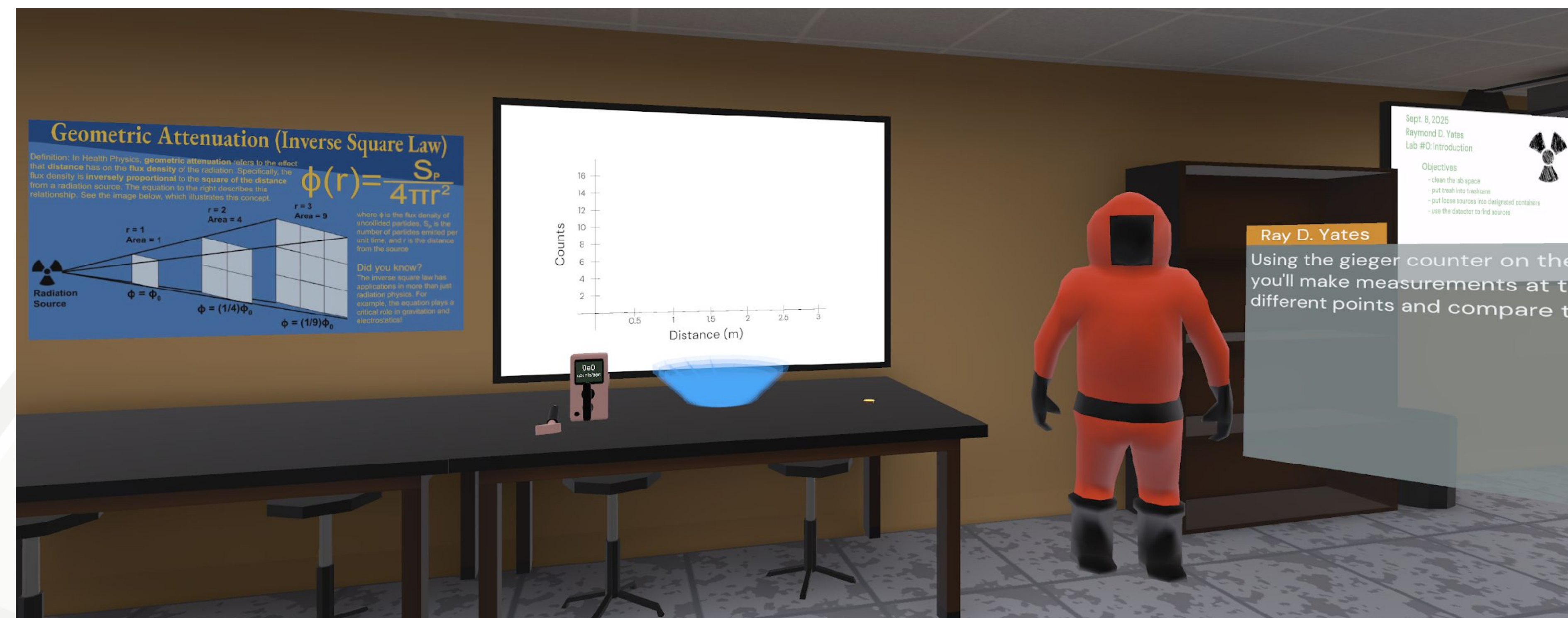
- Serve as an educational tool for all ages
- Accurate radiation physics simulation
- Engaging outreach project
- Multidisciplinary teams over 5 years
- Expanded nuclear science knowledge
- Development of new skills

Technical Approach

- Predominantly undergraduate team
- 2D assets created with Photoshop
- 3D models created with Blender
- Unity 3D game engine (scripted in C#)



Results



Tutorial room experiment with dialogue instructions and automated data graphing



Warehouse environment for source surveying

Expected Impact

Teaching the public about radiation generates interest, and eases concerns about radiation. Virtual reality training also allows radiation workers to intuitively perceive and prevent exposure and contamination.

MTV Impact

- Experience with radiation safety and training
- Gained new skills in programming, physics simulation, and 3D modeling.
- Able to work with a diverse team
- Opportunities for public speaking and poster presentations at MTV workshop and UPR

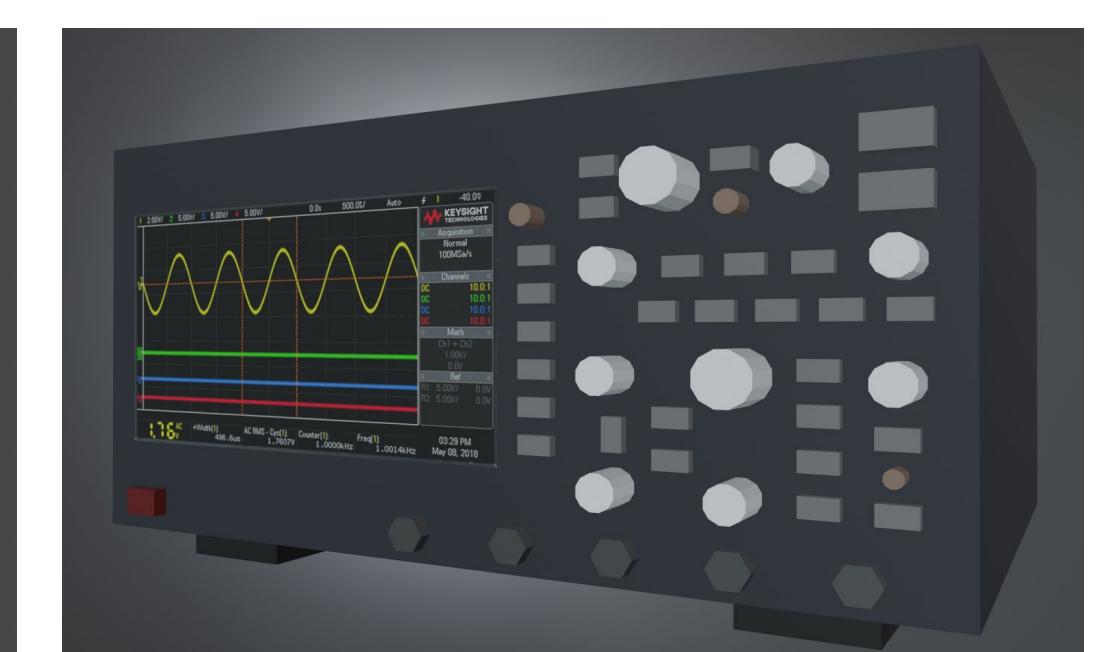
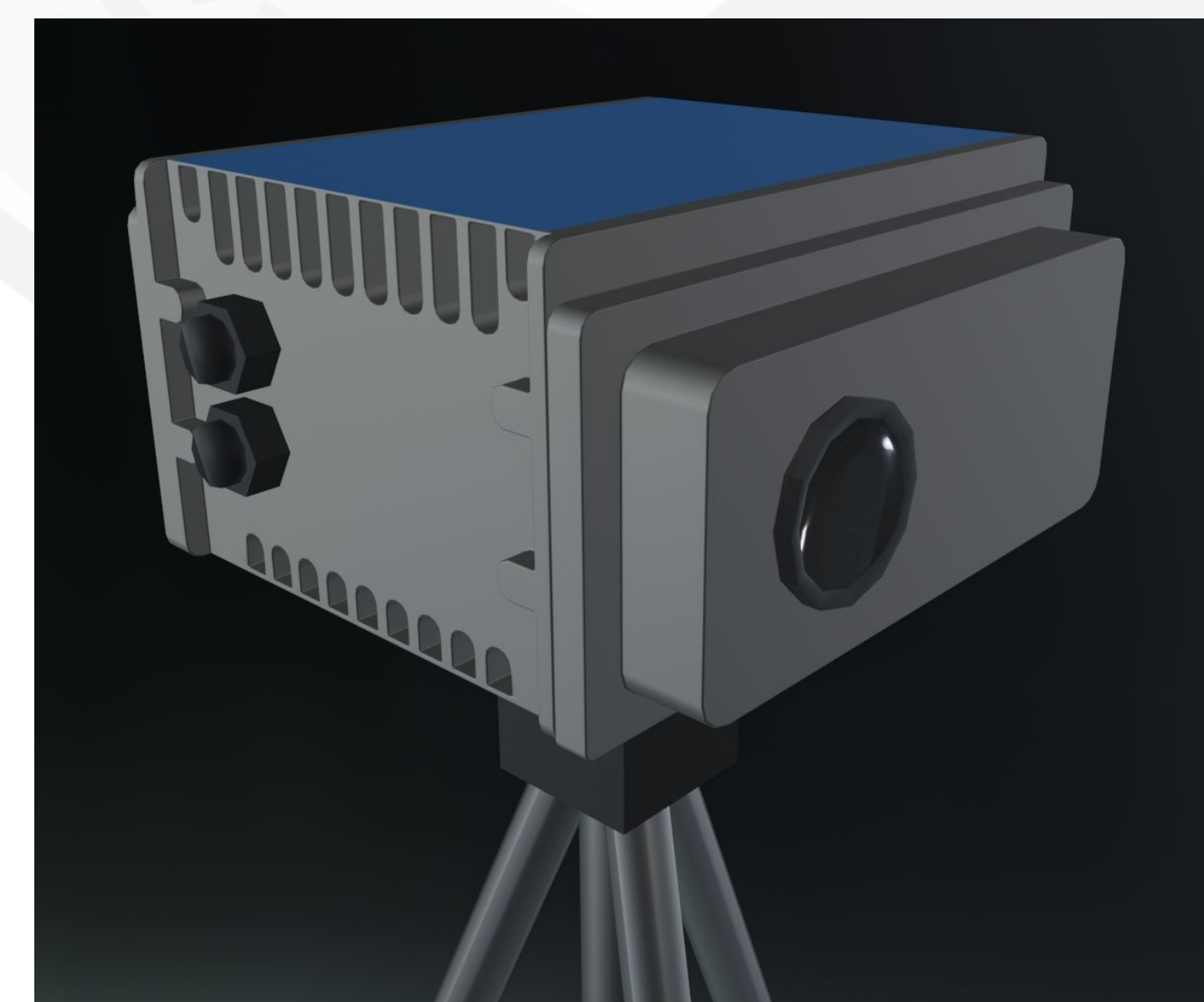
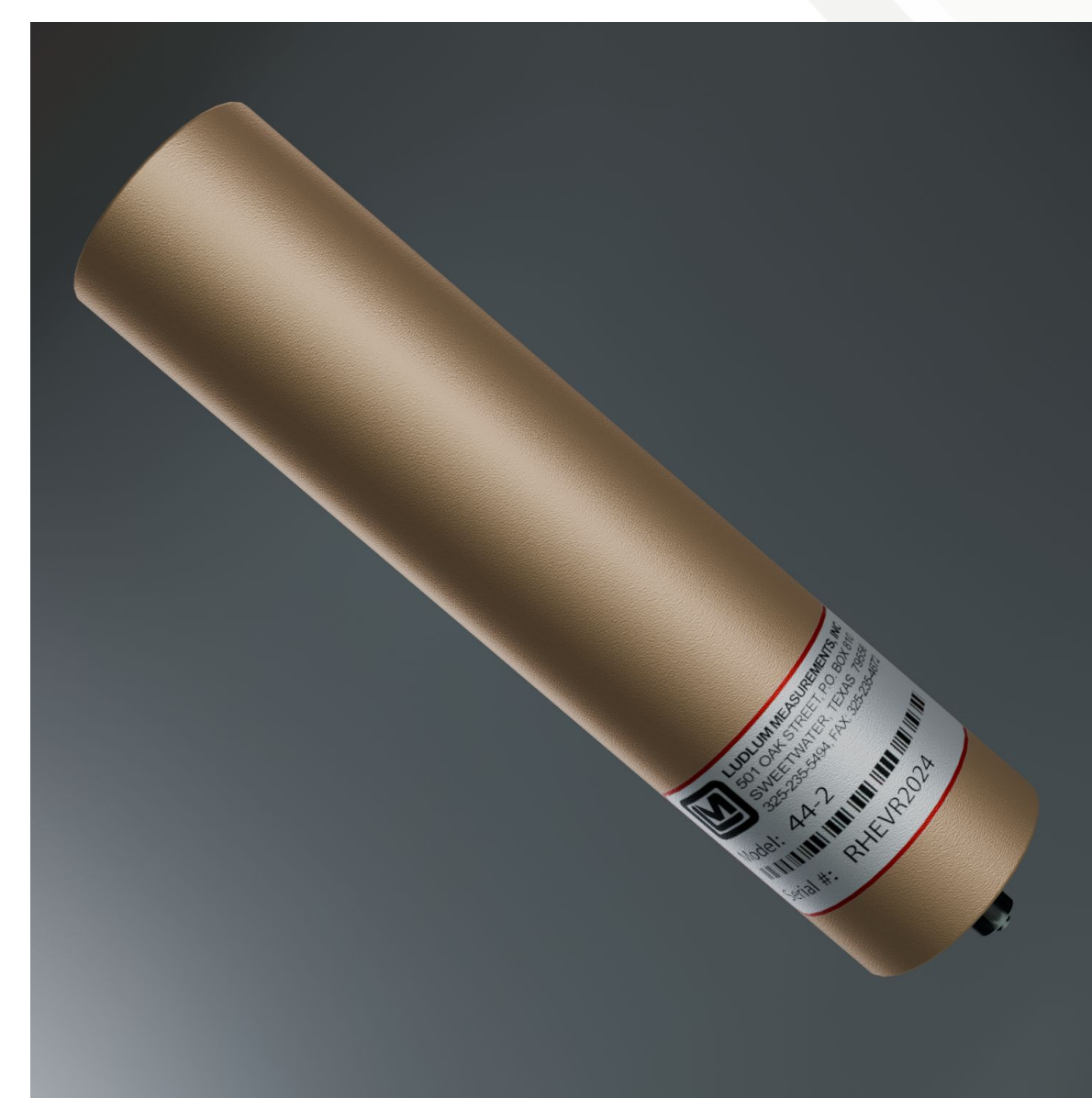
Conclusion

- Fully playable tutorial environment
- Source surveying and shield training rooms
- Flexible tools for developing new training environments

Next Steps

- Improve environment detail/realism
- Contamination training
- Expand radionuclide library
- Improve accuracy of detector characteristics

Ludlum 44-2 Probe, H3D Spectrometer, and Ludlum Model 2221 Meter ->



DC Power Supply and Oscilloscope



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