Shielding Cosmic Rays

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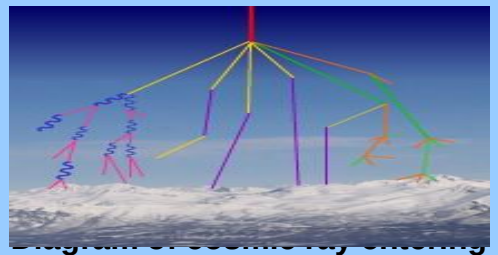
Problem

In deep space travel, cosmic rays are more frequent, which could cause harm to passengers and equipment due to the negative effects of the radiation. Therefore it is necessary to shield deep space travelers from these cosmic rays.



atmosphere

Objectives

- Discover safe and practical materials for shielding cosmic rays
- Test these materials using a cosmic ray detector
-Determine the best material for use in space travel

Experiment

We decided to test 3 different materials: polyethylene trash bags, aluminum foil, and paraffin wax. We covered the cosmic ray detector with these materials and recorded the results against a control. This would show which material would be most effective in shielding cosmic rays.

Results

Control: 1.53 rays/minute

Polyethylene:
-Polyethylene01: 1.03 rays/minute 32.6% decrease
-Polyethylene02: 1.27 rays/min 17.4% decrease
-Polyethylene01(2 layers): 1.03 rays/min 32.6% decrease

Results Cont'd

Aluminum Foil:
-2 Sheets: 1.33 rays/min 13% decrease
-6 Sheets: 1.13 rays/min 26.1% decrease
-10 Sheets: 1.23 rays/min 19.6% decrease

Paraffin Wax: 1.10 rays/min 28% decrease

Conclusion

Due to the results of our experiment, we can tell that polyethylene works best at shielding cosmic rays. High-density polyethylene would provide higher results because we only used the level of polyethylene used in trash bags. If polyethylene were made into a solid brick or block, it would be very effective at blocking cosmic rays.