Ozone Express

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Mission Overview

• We expect to prove that cosmic radiation levels are higher at higher altitudes.
• To record and report back accurate data representing the correlation between altitude and background cosmic radiation.
• We want to gather data to support human space exploration on extraterrestrial planets with different types of atmospheres.
• We have all seen *Interstellar* and we wanted to question the validity of surviving on planets with varying atmospheres.
Design: HOW

– We would achieve this by using high-sensitivity photography film and a radiation sensor.

– A Geiger Counter seems like the most effective way to implement an actual radiation sensor.

– The film would be enclosed within separate chambers with a lead lined shutter that would open up to allow gamma rays into individual chambers.
Design: Sketches
Design: FBD

- **Arduino 1**
  - SD Shield/Card
  - LED
  - Accelerometer
  - Internal Temp Sensor
  - External Temp Sensor
  - Memory Card
  - Camera
  - Switch
  - 9V Battery
  - Lithium Ion Battery

- **Arduino 2**
  - SD Shield/Card
  - LED
  - Pressure Sensor
  - Humidity Sensor
  - Geiger Counter/Radiation Sensor
  - Motors (X8)
  - Film Cover
  - Heater Block
  - Switch
  - 9V Battery

- **Additional Components**
  - 9V Battery
  - Switch
  - LED
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 8th, 2015</td>
<td>Finish the Proposal</td>
</tr>
<tr>
<td>February 9th – February 15th, 2015</td>
<td>Finalize design and budget for materials and parts.</td>
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<tr>
<td>February 15th -February 17th, 2015</td>
<td>Order the materials and parts</td>
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<tr>
<td>February 18th, 2015</td>
<td>Start structure</td>
</tr>
<tr>
<td>March 3rd, 2015</td>
<td>Finish structure</td>
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<tr>
<td>March 12th – March 24th, 2015</td>
<td>Conduct structure test</td>
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<tr>
<td>March 18th, 2015</td>
<td>Finish coding</td>
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<tr>
<td>March 19th – March 26th, 2015</td>
<td>Coding tests</td>
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<tr>
<td>March 31st, 2015</td>
<td>Final check</td>
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<tr>
<td>April 11th, 2015</td>
<td>Launch Day</td>
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**Team philosophy: Stay hungry, stay foolish.**
It means that we always curious for the new things and knowledge, and we don’t want to get complacent for what we have now.
Cost Analysis:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Geiger Counter Radiation Detection Kit</td>
<td>$30</td>
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<tr>
<td>Geiger Tube</td>
<td>$30</td>
</tr>
<tr>
<td>100 Sheets High-Sensitivity Photography Film (We can only find bulk)</td>
<td>$60</td>
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<tr>
<td>Lead Tape</td>
<td>$4</td>
</tr>
<tr>
<td>DC Motors</td>
<td>$10</td>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>$134</strong></td>
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</tbody>
</table>

*Does not include any test materials or any of the required materials given to us.*
Conclusions

- Next step is human exploration
- See if atmosphere affects radiation
- How cosmic radiation will affect humans