



CSCI 215

Social and Ethical Issues in Computer Science

Which systems should never be used
or could harm computer technology?

voting, cosmic rays



Recitation Week 4

- Any Questions?



Not to be Software

- What might be some reasons why something shouldn't be automated or calculated in software?



Internet Voting

- What do you think internet voting might look like?
- Why would the country want to go to this?

What are the problems with Internet Voting?



- cyber attacks
 - What are some examples?
 - Where might these come from?
 - How many people could be involved?
- bugs – hard to test
 - hard to certify no bugs

Compare to mail in voting



Cosmic Rays

- Single event upsets (SEUs) are caused by ionizing radiation strikes that discharge the charge in storage elements, such as configuration memory cells, user memory, and registers. In terrestrial applications, the two ionizing radiation sources of concern are alpha particles emitted from package impurities and high-energy neutrons caused by the interaction of cosmic rays with the earth's atmosphere. Studies conducted over the last 20 years have led to high purity package materials minimizing SEU effects caused by alpha particle radiation. Unavoidable atmospheric neutrons remain the primary cause for SEU effects today. Soft errors are random and happen according to a probability related to energy levels, flux, and cell susceptibility.



Cosmic Rays

- This is not something that should be turned into software but it is something that can harm software/hardware
- What does this mean?



Cosmic Rays

- The new study is based on a type of quantum computing that uses superconducting materials to produce qubits via charged pairs of electrons. The findings indicate that naturally occurring radiation produced by normal materials around us, like concrete structures, is enough to limit the useful lifetime of this type of qubit state to just a few milliseconds, blunting the practical application of a quantum computer. Radiation produced by cosmic rays would have an even greater effect.
- This is a problem because it affects basically any such system that isn't surrounded by lead or stored way underground. Any location exposed to cosmic rays will be a poor place to try to run these kinds of processes. You can pretty much forget about trying to run worthwhile quantum communications through satellites in any practical setting



Cosmic Rays

- Let's do a search:
 - cosmic rays software
 - cosmic rays computers



Presentation Speakers

- 9/3

McLean, Rory

Medina, Mason

Reyher, Mason

Senecal, Audrey

Williamson, Mason