



PUBLIC LECTURE

The University of the West Indies,
Faculty of Science and Technology
presents
“HEAVENS, WHAT A MESS”
By visiting Professor Schonberg

Dr. William P. Schonberg, P.E., is a Professor at the Missouri University of Science and Technology, a registered professional engineer in the States of Missouri and Alabama, and has over 25 years teaching and research experience in the areas of shock physics, spacecraft protection, hypervelocity impact, and penetration mechanics. The results of his research have been applied to a wide variety of engineering problems, including the development of orbital debris protection systems for spacecraft in low earth orbit, kinetic energy weapons, the collapse of buildings under explosive loads, insensitive munitions, and aging aircraft.

A significant part of Dr. Schonberg's research is dedicated to improving the safety of long-duration spacecraft and of personnel involved in space flight and operations. His research is unique in that it considers a number of significant parameters typically omitted in the analysis and design of damage-resistant spacecraft.

Since 1957, the near-earth population of trackable space objects has grown from 1 to over 18,000. These objects are typically softball size or larger. Of these 18,000+ trackable objects, only several hundred are operational spacecraft. The remainder are pieces of space junk, that is, objects which no longer serve any useful purpose.

As a result, all spacecraft that operate in low-earth-orbit (such as the International Space Station) are subject to high-speed impacts by space junk, which is also called 'space debris' or 'orbital debris'. The threat of damage from high-speed orbital debris particle impacts has become a significant design consideration in the development and construction of long duration earth-orbiting spacecraft. Considerable resources have been expended by NASA, the European Space Agency (ESA), and many other countries around the world to design and build spacecraft that can survive in the hostile space environment and which can be protected from damage by pieces of space junk.

During this presentation a variety of topics related to space debris will be reviewed, including:

- Where does space debris come from?
- How much space junk is really out there?
- What happens when a spacecraft is hit by a piece of space junk?
- How can we protect a spacecraft against damage by space debris impacts?
- Is there any way to clean up the near earth region of s
- Is there any way to clean up the near earth region of space?
- Will the situation improve or worsen in the future?



**PROFESSOR
WILLIAM P. SCHONBERG**

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Science and Technology**

**“HEAVENS,
WHAT A MESS”**

DATE: Wednesday 7th October, 2015 5.00 p.m. – 7.00 p. m.

VENUE: Engineering Lecture Theatre 1, U.W.I., St. Augustine)