

Diabologic: Odds and Ends 2012

by Frank Dolinar

Part One: Orbital Trash

Apparently there are other people concerned with the issue of orbital debris. On February 15, 2012, a group of Swiss astronauts and university professors announced that they are working on a robotic spacecraft (a space “tugboat”), called CleanSpace One, intended to capture large chunks of debris, alter the item’s orbit, and send it to burn up in Earth’s atmosphere.

The design seems workable and as a research project it’s relatively inexpensive, with a price tag of only \$11 million US. At the moment, it can be thought of as a concept for an orbital Roomba. Gearing up to get a fleet of these tugs into orbit to do their job will cost more, of course, and take time. The hope is that governments and private industry will contribute to the effort.

The original story was published on the Mashable website – with a related video – and can be found at <http://mashable.com/2012/02/15/cleanspace-one-robot/>

Part Two: Faster-than-Light Neutrinos

Sometimes, the answer to a world shaking problem ends up being... mundane. This appears to be the answer in the problem of the faster than light neutrinos reported on September 22, 2011.

Neutrinos sent through the ground from CERN traveled 732 kilometers to the Gran Sasso laboratory in northern Italy arrived early, by a consistently measured 60 nanoseconds. Since neutrinos usually (okay, always) travel at the speed of light, these results suggested that the particles had traveled faster than the speed of light on their journey from the emitter (CERN) to the collector (Gran Sasso).

Didn’t seem possible to anyone with any background in physics. But the results, as reported, were as mind-boggling as they were puzzling.

On February 22, 2012, five months after the original report, the anomalous results appear to have been caused by a faulty fiber-optic connection between a GPS unit and a computer, the fault causing the GPS timing signal to be late by – drumroll, please – approximately 60 nanoseconds. Upon fixing this connection, the researchers found no time discrepancy in new experimental results.

At a recent AAAS meeting in Vancouver, British Columbia, CERN's director of research, Sergio Bertolucci, made a humorous observation on what the results would be: "I have difficulty to believe it, because nothing in Italy arrives ahead of time."