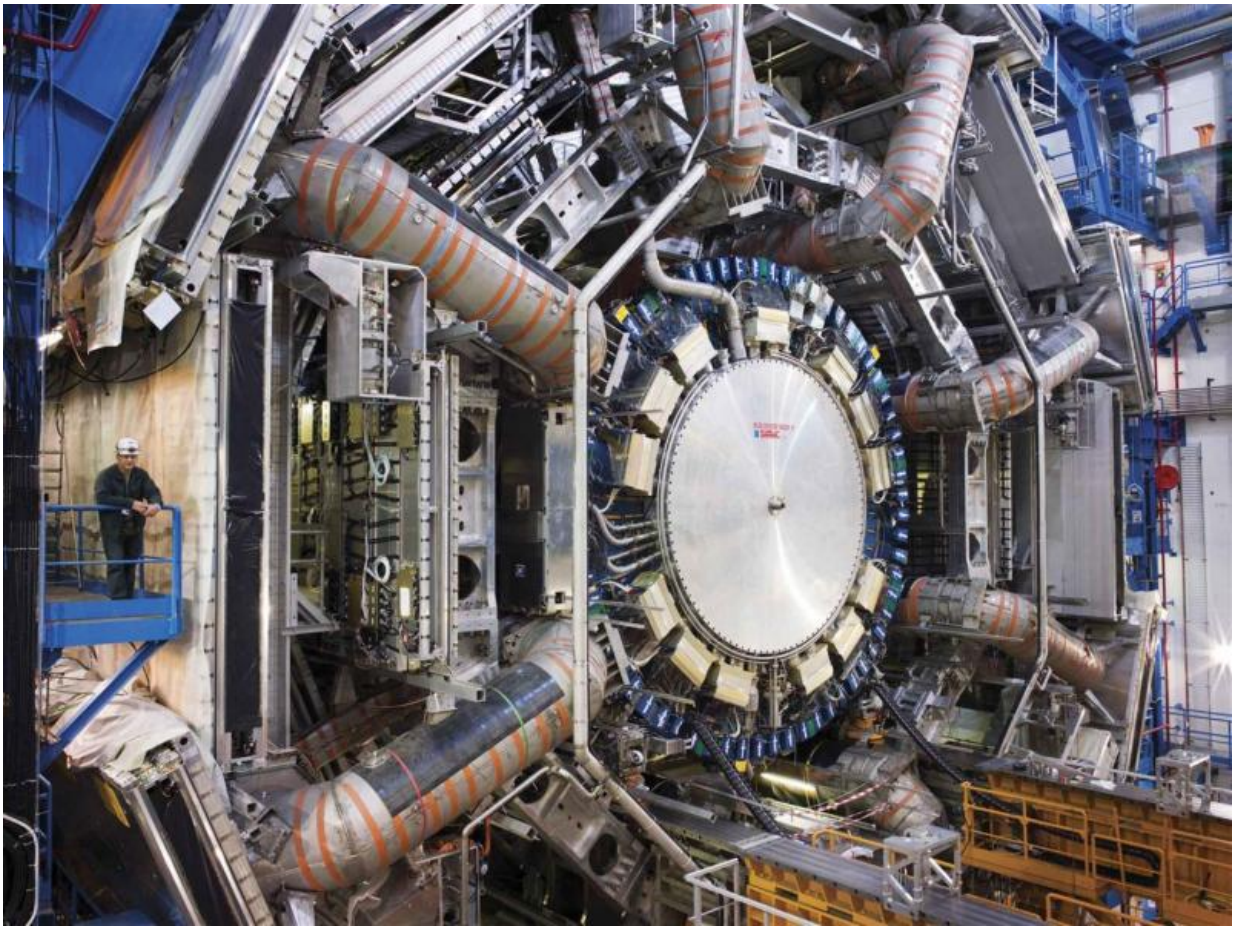
CERN upgrade to require removing thousands of old unused cables

January 28 2016, by Bob Yirka



The ATLAS detector. Credit: Maximilien Brice/CERN

(Phys.org)—As if upgrading one of the most complicated pieces of

machinery in the world three years from now is not difficult enough, workers on the CERN project are also going to have to remove, according to *Motherboard*, approximately 9,000 old, unused cables.

Anyone who has ever looked into a cable closet knows that after some time has passed, it comes to resemble a rat's nest. The ones' at CERN have been growing since approximately 1954 when CERN was first established. Since that time, workers have been adding new cable with each upgrade to provide for new services. Unfortunately, they were not removing old cables as they became obsolete. That has led to a situation where there is no more room for putting in the new cables required for the LHC Injectors Upgrade Project scheduled for 2019.

Complicating the removal process is the difficulty in ascertaining which cables need to be removed (most of them are part of safety and control systems)—some of which wind their way through other equipment and systems areas and stretch to over half a football field in length. Pulling the wrong cable could be disastrous, because it could cause the collider to shut down, wasting valuable up-time. To handle the task, a team of 60 workers has been assembled and trained—their immediate task is to identify which cables to pull—they are comparing entries in a database of all installed cables with what they actually see in the field, and then updating the database to reflect the new reality—the team has thus far found an error rate of approximately 2 percent. The cables cannot be pulled, of course, during the time when the accelerator is in operation—that will have to wait for the annual winter maintenance shutdown (technical stop).

The team reports that in some areas, some cables have already been removed, approximately 2,700 of them, but they have also identified approximately 3,000 cables in each injector which still need to come out, adding up to 9,000 in all. Because of the sheer number of cables, the team will not be able to remove them all during one technical stop, they

will have work on them every year until they get the job done, which they estimate will be in 2020—just in time for the major 2019 upgrade to take place.