Plans for radiation tests

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Cameras tests

The existing test system: bulldozer (with CMOS camera) and entry CCD camera will be leave as it is placed. Entry camera will provide tunnel view. The bulldozer toy will stay near the $e^- - e^+$ converter as long as CCD camera situated on it survive. It will show the total dose of this type of camera, after which it completly dies. This type of camera is chosen because it is expected that it will survive longer than CCD.

New movement system will be developed. It will consist of the same type of bulldozer toy (maybe little better to be more useful for electronics testing) and four cameras (2 * CCD, 2* CMOS). One of CCD cameras and one of CMOS cameras will be blinded - there will be used for white dead pixels test. Second CCD camera will be aimed at the ceiling of the tunnel. Ceiling is bright, so it will show black dead pixels. Only one camera will be used in this test, bacause there are only three channels available in frame grabber. CCD type is chosen because of its bigger sensivity for gamma radiation. The last camera (CMOS) will provide view for driving vehicle.

FPGA test

Depending on results from radiation tests done in Finland, large number of dynamic SEUs are not expected. The first test will be readback test with as low radiation level as it is possible. The board with FPGA chip will be placed in the tunnel, near the exit.

Next activity will need new transport system. Test board will be situated on it. By moveing of bulldozer toy, then radiation level will be changed. The tests that will be performed are readback test and logic test for dynamic SEU. Second test depends on the first tests in low radiation level.

Schedule of tests

1. Preparations of hardware and software.
2. Preliminary radiation tests of FPGA chips.
3. Radiation tests of cameras and FPGAs with analisys and improvements of system and testing routines, depending on achived results.
4. Summaries and conclusions on results.