

## Electron Cloud and Scrubbing

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### **Abstract**

During 2011, the scrubbing dose accumulated in the LHC during the tests with 25ns beams could decrease the SEY of the chambers well below the multipacting threshold for 50ns beams. During the Winter shut-down, the conditioning was preserved to such an extent as to guarantee smooth “electron cloud free” operation with 50ns beams since the beginning of the 2012 run. However, the 25ns injection tests that took place in July 2012 revealed that the chambers had slightly deconditioned since the last 25ns test of 2011. Although this was not sufficient to cause electron cloud formation with 50ns beams, it could noticeably affect the quality of the 25ns beams.

More extensive tests with 25ns beams (at both injection energy and 4TeV) are planned to take place at the beginning of December 2012 to gather more experimental information on the scrubbing process in the LHC and help define a scrubbing strategy for post-LS1 operation both with 50ns and 25ns beams. The goal of these tests will be also to identify possible bottlenecks (e.g. heating or outgassing in specific equipments), which could prevent the safe injection and storage of the number of bunches needed to perform an efficient scrubbing process. The test ramps to 4 TeV, which will be made to enable long range beam-beam MDs and a pilot physics run with 25ns beams before LS1, will also serve the purpose to further validate our photoelectron model, on which the predictions of the electron cloud behavior at 6.5 TeV are fully based.