

## MEMORANDUM

Date: November 25, 2019  
To: Distribution  
From: Rolf Ent and Camille Ginsburg for the Nuclear Physics Experiment  
Scheduling Committee  
Subject: Changes to the Accelerator Experiment Schedule and Energy Gain per Pass

The start of accelerator restore and of the experimental program had to be delayed by a week to repair a beam vacuum leak detected between cryomodules 1L09 and 1L10 in the north linac. Repair required warming up those modules to room temperature, replace the guider joining them and cooling the modules down to 2K again, a time consuming process. We now expect the experimental program to start on December 2, 2019.

During the down period between the low energy summer run and now, a completely refurbished C100 cryomodule was installed in the north linac to recover accelerating gradient lost during the spring 2019 run. The cryomodule taken out to make space for the new C100 was, in turn, used to replace the worst performing cryomodule in the north linac. In addition, one cryomodule which had been off was replaced with a spare. These improvements led to a modest energy gain in the north linac. Despite these efforts, the north linac cannot run above 1031 MeV with reasonable trip rate and heat load, and a reasonable confidence that we can keep a constant energy gain over the long run period. Other constraints, like the need to have good beam polarization at the various halls, required a machine configuration of 121-1031-1031 MeV for the injector, north and south linacs respectively. This configuration leads to a 5.5 pass energy of 11.4 GeV instead of the 11.6 GeV shown on the schedule with expected beam polarization figures of merit ( $P^2$ ) at the halls of 1 (A), 0.97 (B) and 0.99 (C). We understand this energy reduction impacts negatively some of the scheduled experiments but have no choice given the issues described above. We do apologize to those experiments affected.