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Toward TeV/m Acceleration: Current Status of CNT-Channelling Acceleration Research at Fermilab's Advanced Superconducting Test Accelerator (ASTA) Facility

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In principle, crystals, if excited by a short pulse bunch or a high power laser, can hold acceleration gradient of 0.1 - 10 TeV/m since they have a few orders of magnitude higher ambient charge density than gas-state plasma. In the effort to prove the concept, we have been planning a feasibility test of beam-driven channeling acceleration with a carbon nanotubes (CNTs) target. This talk will discuss some preliminary simulation results and present current status of experimental setup at the Fermilab Advanced Superconducting Test Accelerator (ASTA) 50 MeV linac beamline.

Primary author: Prof. SHIN, Young-Min (Northern Illinois University)

Presenter: Prof. SHIN, Young-Min (Northern Illinois University)

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