Biologically Optimized Treatments for Hadron Radiotherapy¹ VA-
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on University — Near future advances in proton radiotherapy technology will in-
creasingly require complex, conformal treatment planning. However, the current
state of knowledge of the biological efficiency of proton beams may be inadequate to
facilitate precision, and reduced margins. A new project at the Hampton University
Proton Therapy Institute and the Eastern Virginia Medical School aims to facilitate
the expected benefits of increasingly conformal treatment capabilities. Specifically,
we seek to establish with measurements the biological depth dose profile of pro-
tons with incident energies in the range 62-210 MeV, and to utilize these also to
provide vastly improved model algorithms for patient treatment planning based on
biological, rather than simply physical, depth dose profiles. A progress report on a
model for proton biological efficiency calculations as an input algorithm for treat-
ment planning with protons will be presented. The planned measurements will be
discussed.

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