Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Nuclear Radii Calculations in Various Theoretical Approaches[1]
IVAN NOVIKOV, Western Kentucky University, CARLOS MERINO, Universidade de Santiago de Compostela, Spain, YULI SHABELSKI, Petersburg Nuclear Physics Institute — The information about sizes and nuclear density distributions in unstable (radioactive) nuclei is usually extracted from the data on interaction of radioactive nuclear beams with a nuclear target. We show that in the case of nucleus-nucleus collisions the extracted parameters depend rather strongly on the used theoretical approach. The values of root-mean-square (r.m.s.) radii for nuclei with atomic weights 12-40 vary by approximately 0.1 fm when the analysis is provided in the optical approximation, in rigid target approximation and in the exact expression of Glauber Theory. We present several examples of r.m.s. radii calculations using these three theoretical approaches.

[1]This work is supported in part by the National Science Foundation grant EPSCoR RSF-023-05.

Ivan Novikov
Western Kentucky University

Date submitted: 05 Jan 2009 Electronic form version 1.4