

Electron scattering from halo nuclei

J.S. Al-Khalili¹ and B.V. Danilin²

¹ Department of Physics, University of Surrey, Guildford, U.K.

² RRC Kurchatov Institute, Moscow, Russia

A new probe of halo nuclei is likely to become available over the next few years when several accelerator laboratories around the world plan to build e^- -RI beam colliders - systems of double storage rings used to accumulate short-lived exotic isotopes and electrons then collide the two beams at several hundred MeV relative energies. By far the simplest process to investigate is thus electron elastic scattering, which has been used for over half a century to study the electromagnetic structure of nuclei. In this work we investigate the sensitivity of the charge form factor of ${}^6\text{Li}$ and ${}^6\text{He}$ ground state densities to different three-body structure models. While the experimental form factor for ${}^6\text{Li}$ is well-known, it is interesting to investigate the sensitivity of the corresponding form factor for ${}^6\text{He}$ to the different theoretical models. Since electromagnetic probes do not feel the presence of the neutron halo directly it is worth investigating the charge distribution in comparison with the undisturbed core model and the possible polarisation of the alpha-core. preliminary results will be presented.