

**A new test for the surface diffuseness using large-angle quasielastic scattering
at extreme sub-barrier energies**

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Abstract

We measured large-angle quasielastic scattering for the spherical $^{16,17,18}\text{O} + ^{92}\text{Mo}$ systems at deep sub-barrier energies. This is a process sensitive to the surface region of the nuclear potential which can be used to probe surface diffuseness. The results show that the Sao Paulo Potential is able to predict the diffuseness for which there is agreement with the data. For the systems studied, the diffuseness values are of the order of 0.70 fm, larger the usual 0.63 fm predicted by folding potentials and previous works on similar systems.