85. Kinetic energy (we use the classical formula since v is much less than c) is converted into potential energy (see Eq. 25-43). From Appendix F or G, we find $Z = 3$ for Lithium and $Z = 90$ for Thorium; the charges on those nuclei are therefore $3e$ and $90e$, respectively. We manipulate the terms so that one of the factors of e cancels the "e" in the kinetic energy unit MeV, and the other factor of e is set equal to its SI value 1.6×10^{-19} C. We note that $k = 1/4\pi\varepsilon_0$ can be written as $8.99 \times 10^9\,\mathrm{V{\cdot}m/C}$. Thus, from energy conservation, we have

$$K = U \quad \Longrightarrow \quad r = \frac{kq_1q_2}{K} = \frac{\left(8.99 \times 10^9\ \frac{\mathrm{V{\cdot}m}}{\mathrm{C}}\right)\left(3 \times 1.6 \times 10^{-19}\,\mathrm{C}\right)(90e)}{3.00 \times 10^6\,\mathrm{eV}}$$

which yields $r = 1.3 \times 10^{-13}$ m (or about 130 fm).