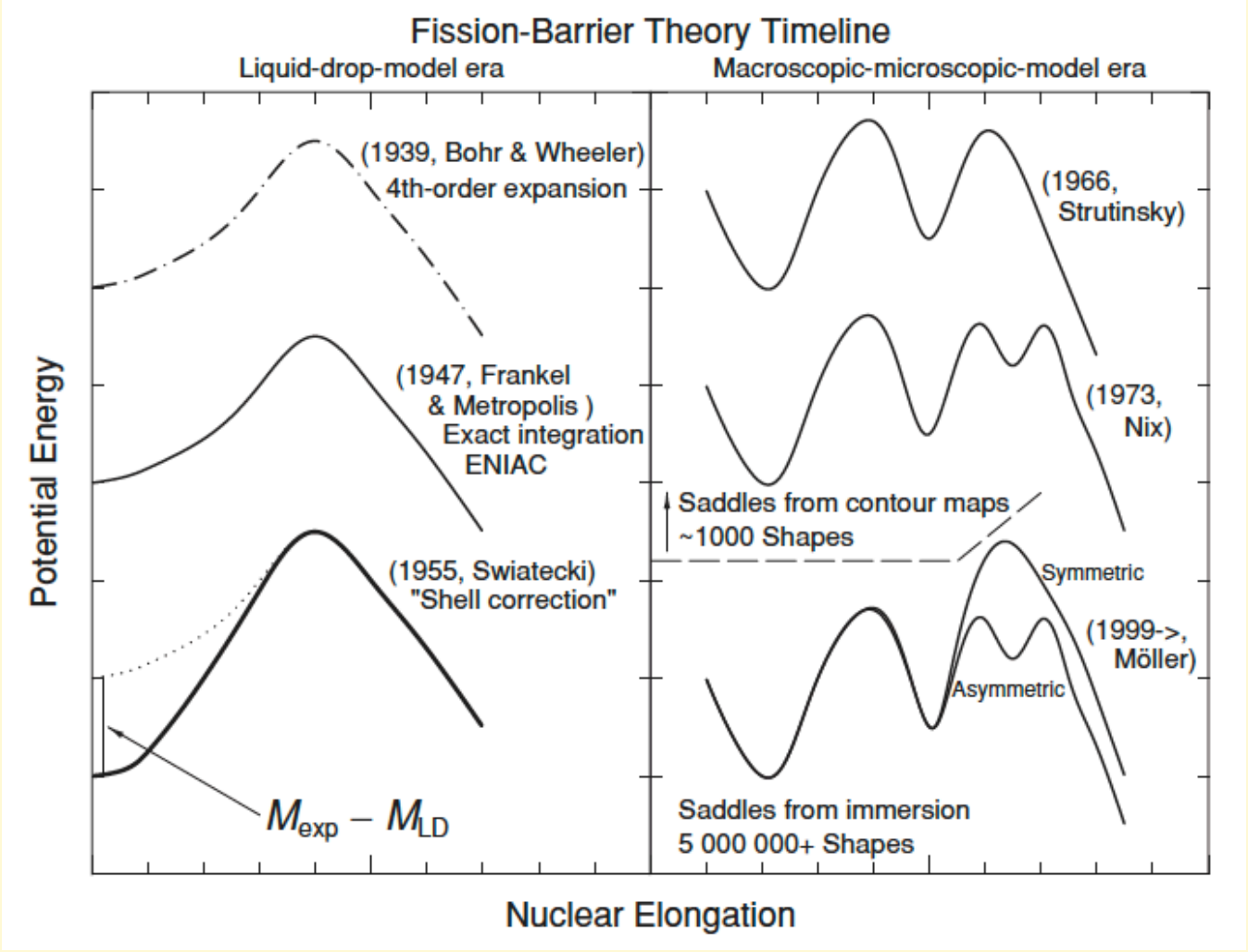
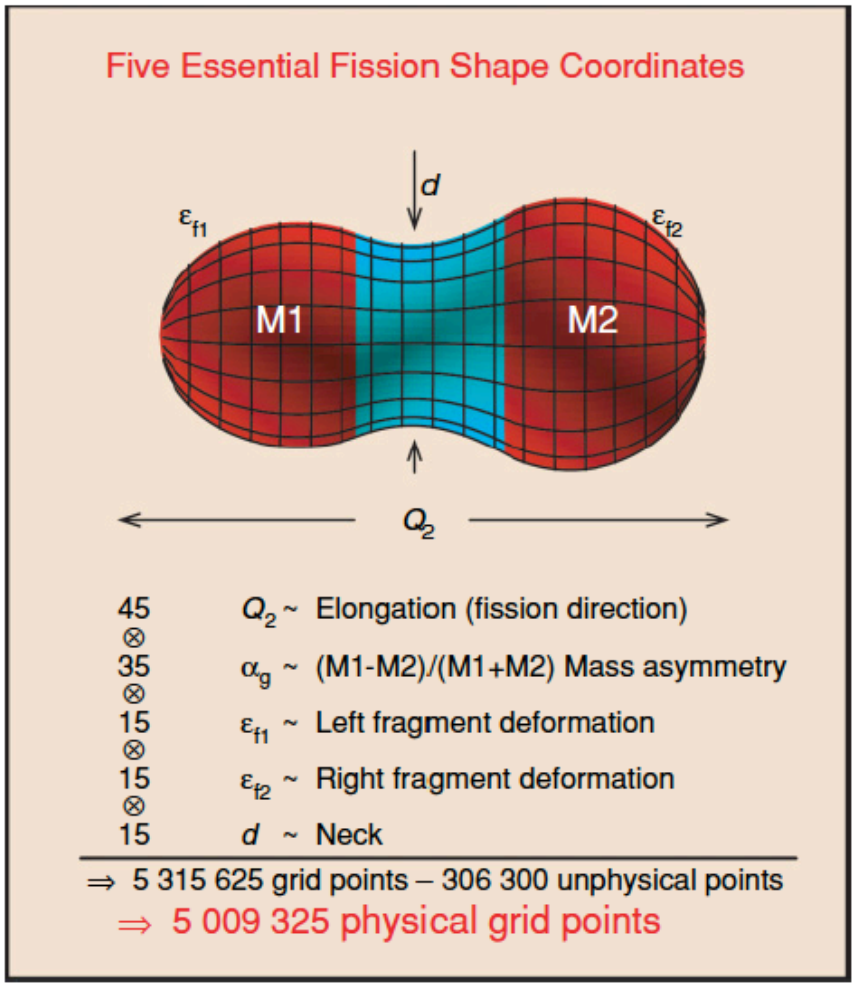
Historical development of fission barrier theory

Ref: P. Möller et al, PRC 79, 064304 (2009)



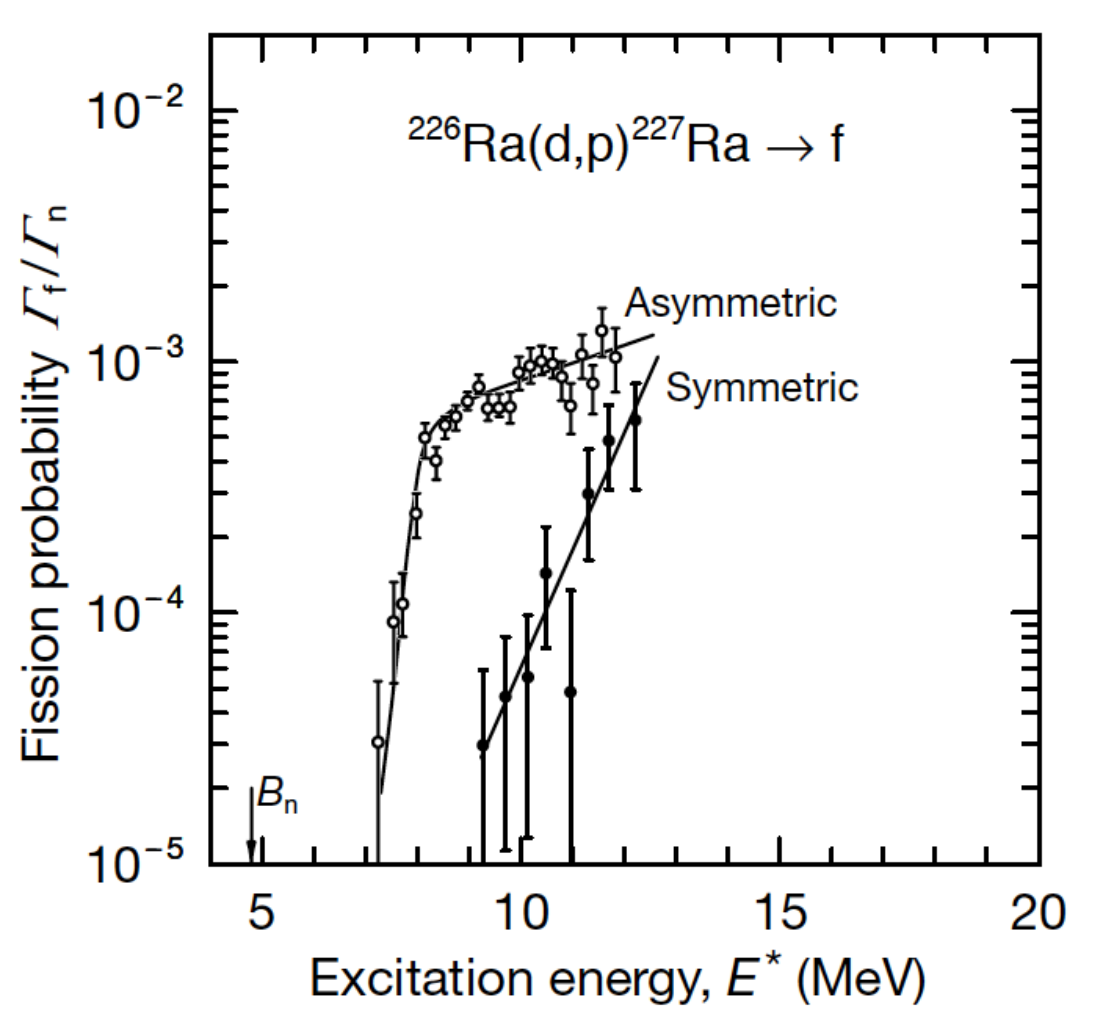
Fission: large-amplitude collective motion

Ref: Möller et al., Phys. Rev. C79, 064304 (2009)



Asymmetric and symmetric fission in ^{227}Ra

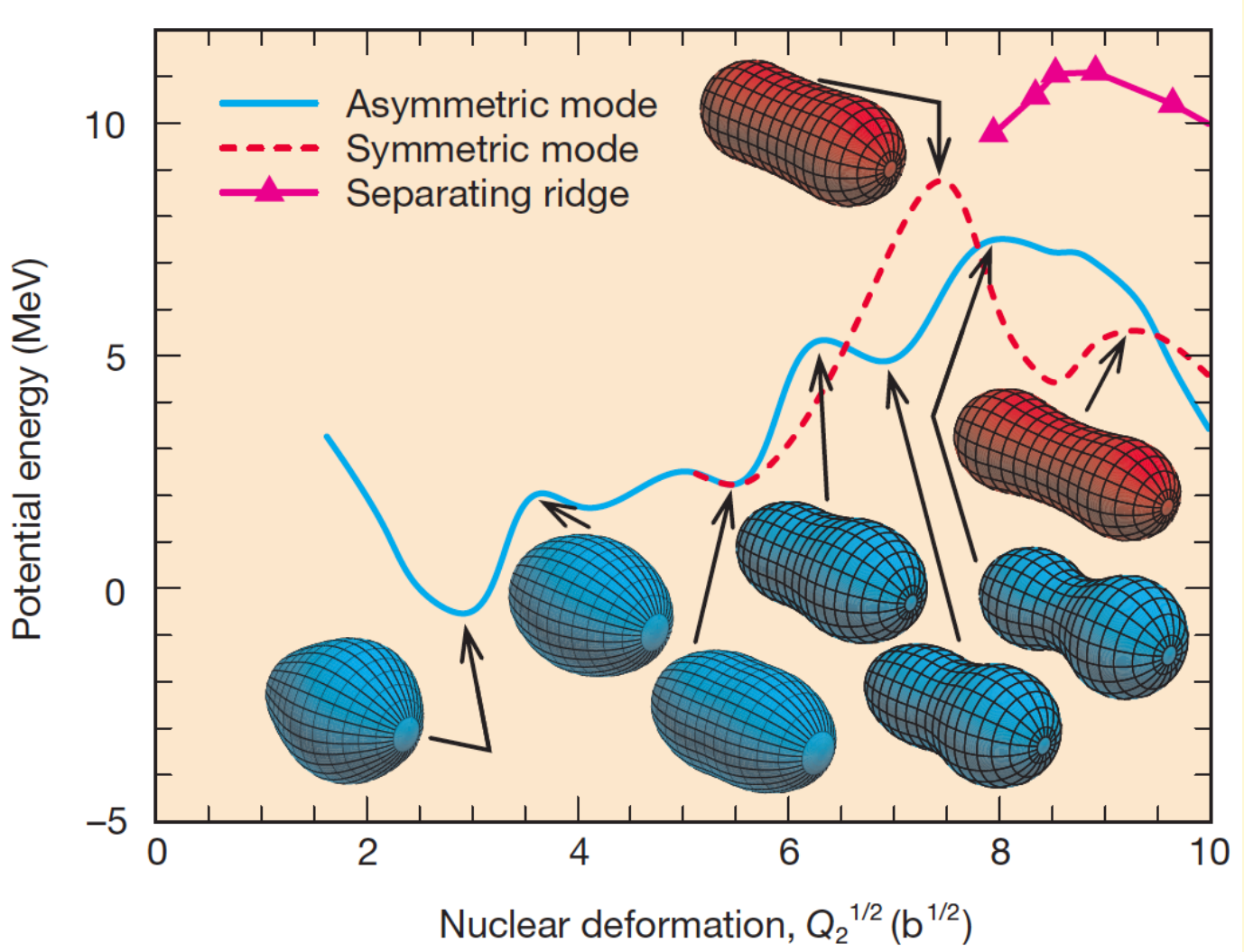
Ref: Möller, Madland, Sierk & Iwamoto, Nature, vol. 409, p. 785 (2001)



Calculation of triple-humped fission barrier for ^{228}Ra

finite-range liquid drop model + shell corrections (Nilsson model)

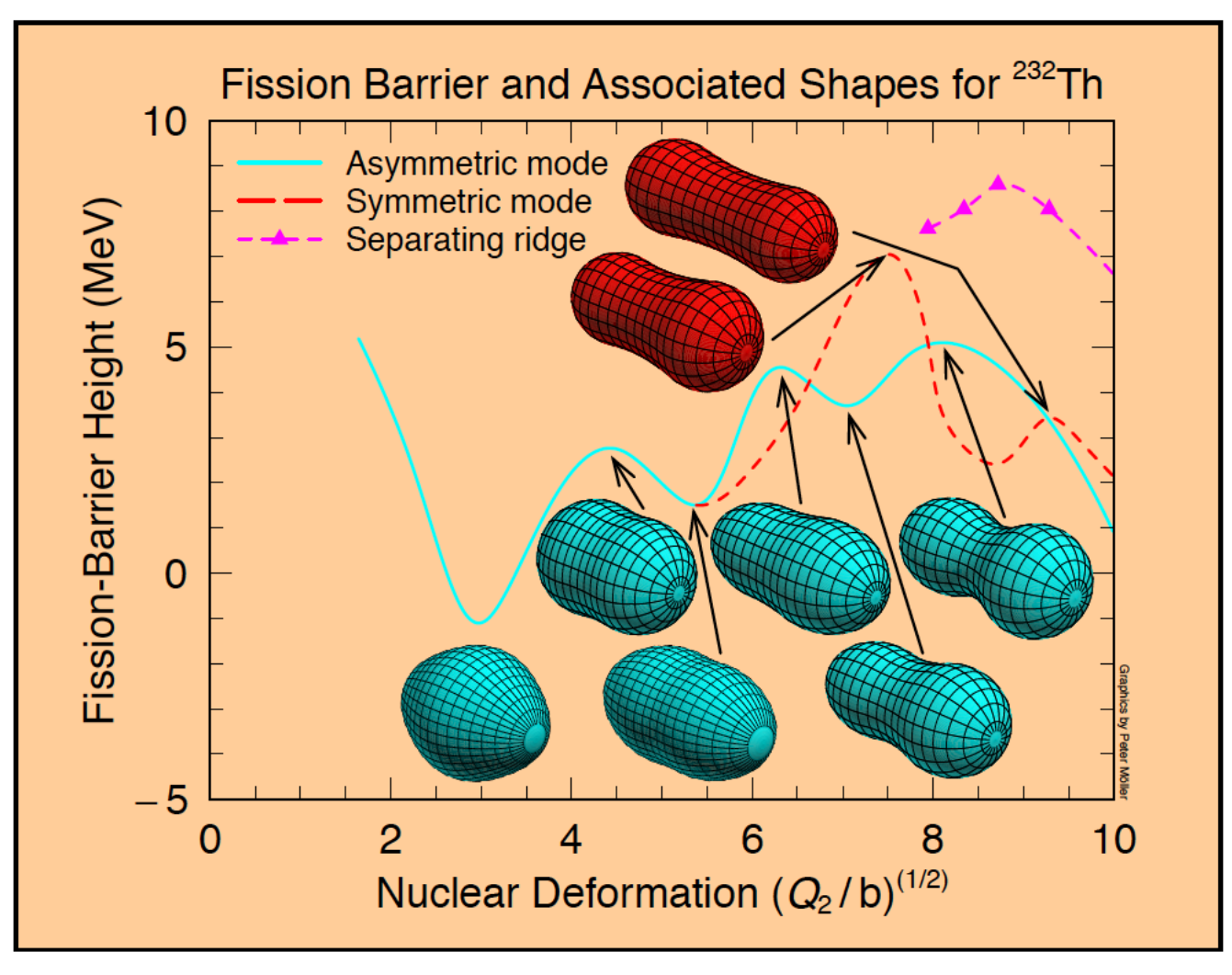
Ref: Möller, Madland, Sierk & Iwamoto, Nature, vol. 409, p. 785 (2001)



Calculation of triple-humped fission barrier for ^{232}Th

finite-range liquid drop model + shell corrections (Nilsson model)

Ref: Möller, Madland, Sierk & Iwamoto, J. Nucl. Sci. Techn. (2002)



Exp. charge and mass distribution in fission of ^{234}U

Ref: Möller, Madland, Sierk & Iwamoto, Nature, vol. 409, p. 785 (2001)

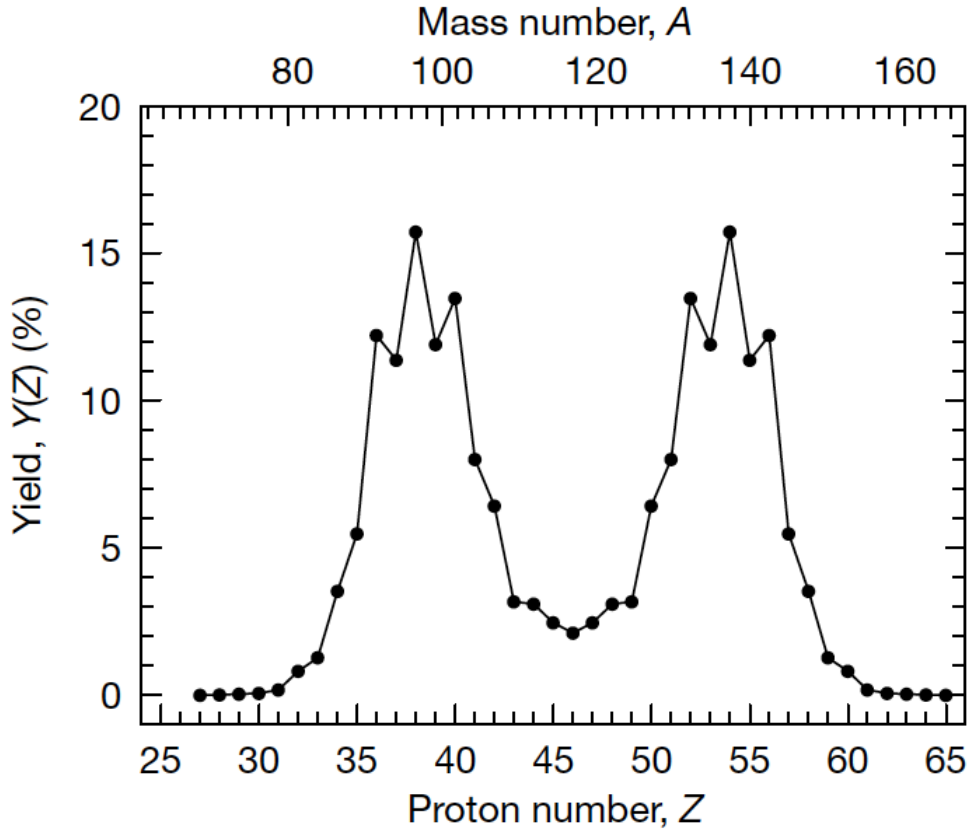
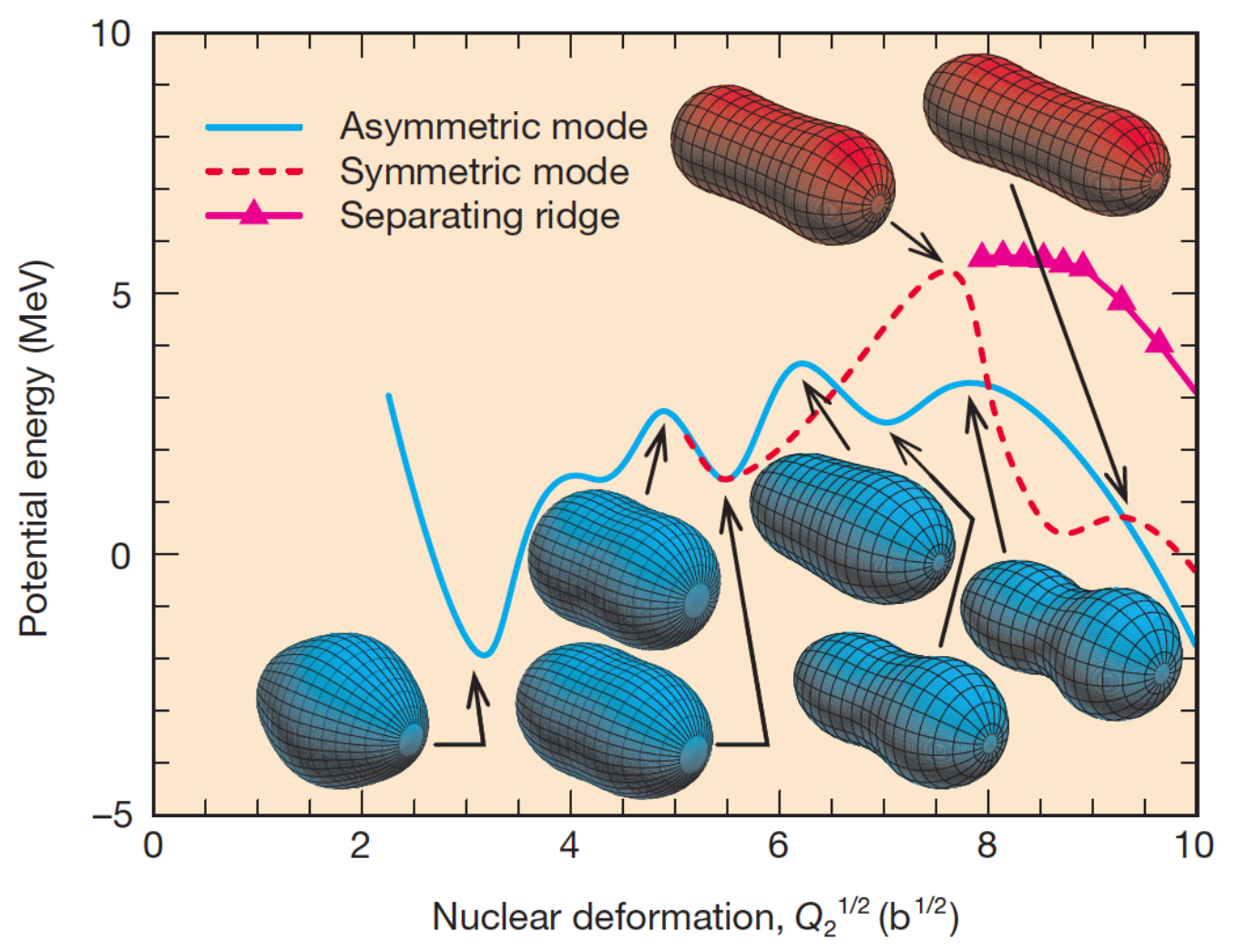


Figure 2 Nuclear charge yield in electromagnetic-induced fission of ^{234}U from ref. 28. The data are converted to a mass–yield distribution before neutron emission (top axis) by assuming that the proton/neutron ratio *Z/N* is the same in each of the two fission fragments as in the original nucleus.

Calculation of triple-humped fission barrier for ^{234}U

finite-range liquid drop model + shell corrections (Nilsson model)

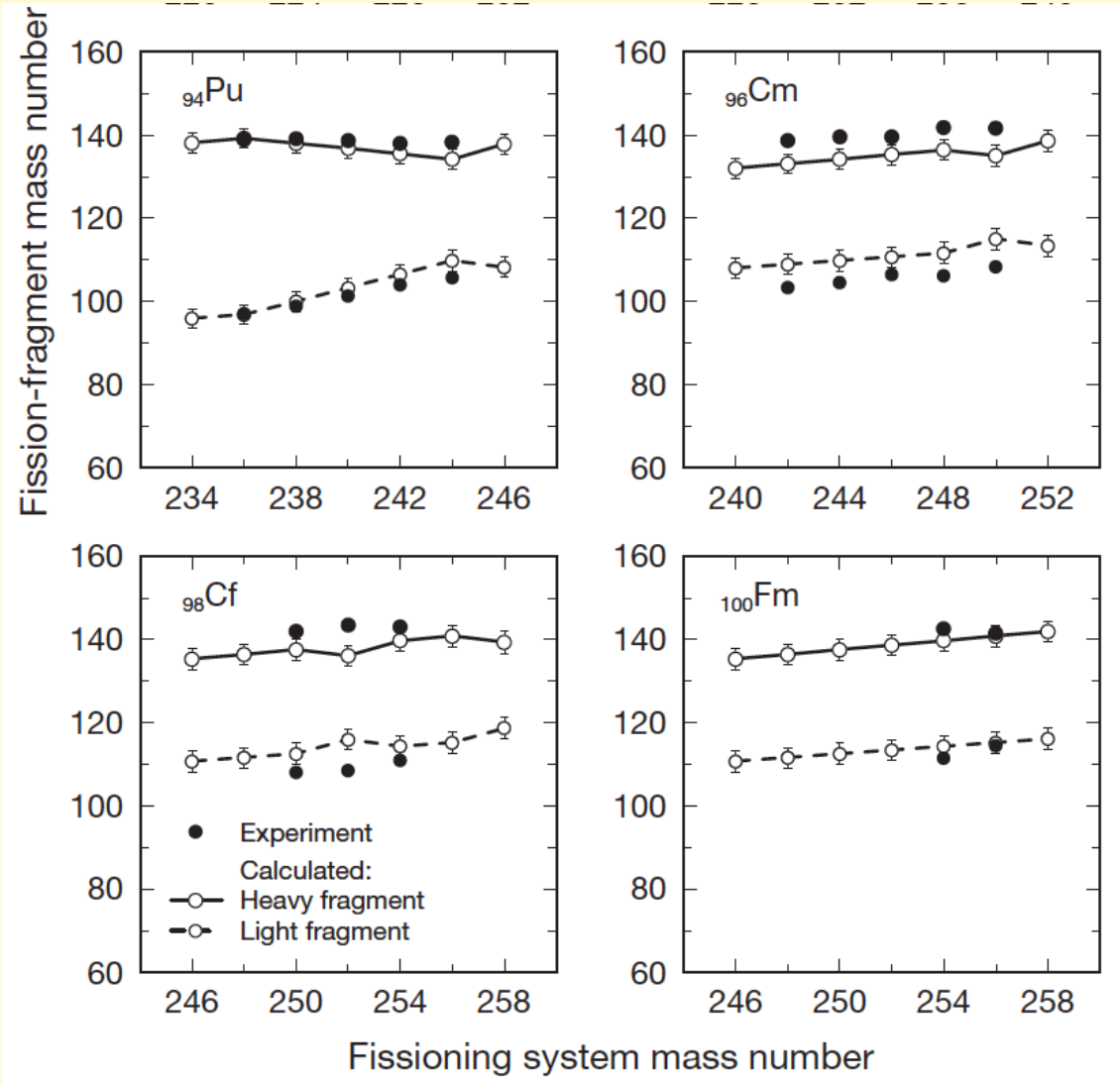
Ref: Möller, Madland, Sierk & Iwamoto, Nature, vol. 409, p. 785 (2001)



Mass numbers for heavy and light fission fragments

finite-range liquid drop model + shell corrections (Nilsson model)

Ref: Möller, Madland, Sierk & Iwamoto, Nature, vol. 409, p. 785 (2001)



Inner & outer barrier heights and isomers for Th and U

finite-range liquid drop model + shell corrections (Nilsson model)

Ref: Möller, Sierk, Ichikawa et al., Phys. Rev. C 79, 064304 (2009)

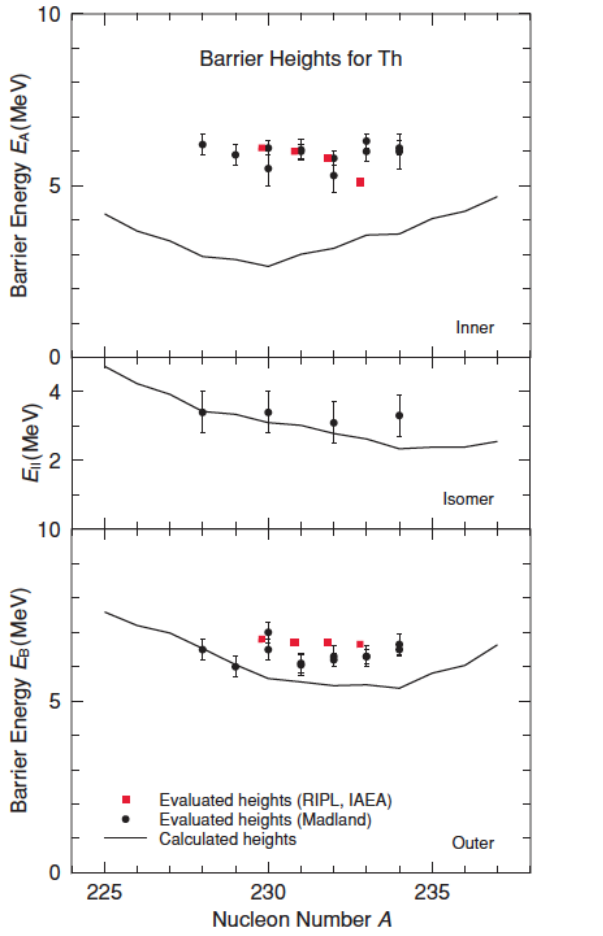


FIG. 23. (Color online) Calculated first and second saddle heights and fission-isomer energies for Th isotopes, compared with experimental data where available.