Deformed harmonic oscillator ($\delta = 0.3$) without spin-orbit term: probability density for single-particle quantum states

$n_z = 0, n_\rho = 0, m_\ell = 0$

$n_z = 1, n_\rho = 0, m_\ell = 0$
Deformed harmonic oscillator ($\delta = 0.3$) without spin-orbit term: probability density for single-particle quantum states

\[ n_z = 1, n_\rho = 0, m_\ell = 1 \]

\[ n_z = 1, n_\rho = 1, m_\ell = 1 \]
Single-particle energies vs. deformation

right side: deformed harmonic oscillator without spin-orbit term

red lines: + parity, blue lines: - parity

Ref: MSUCL-1345, p. 96 (Nov. 2006)
Deformed Woods-Saxon shell model with spin-orbit term
Ref: Russell Kegley, Ph.D. thesis (Vanderbilt, 1996)

neutron single-particle levels for Strontium-99
solid lines: + parity
broken lines: - parity