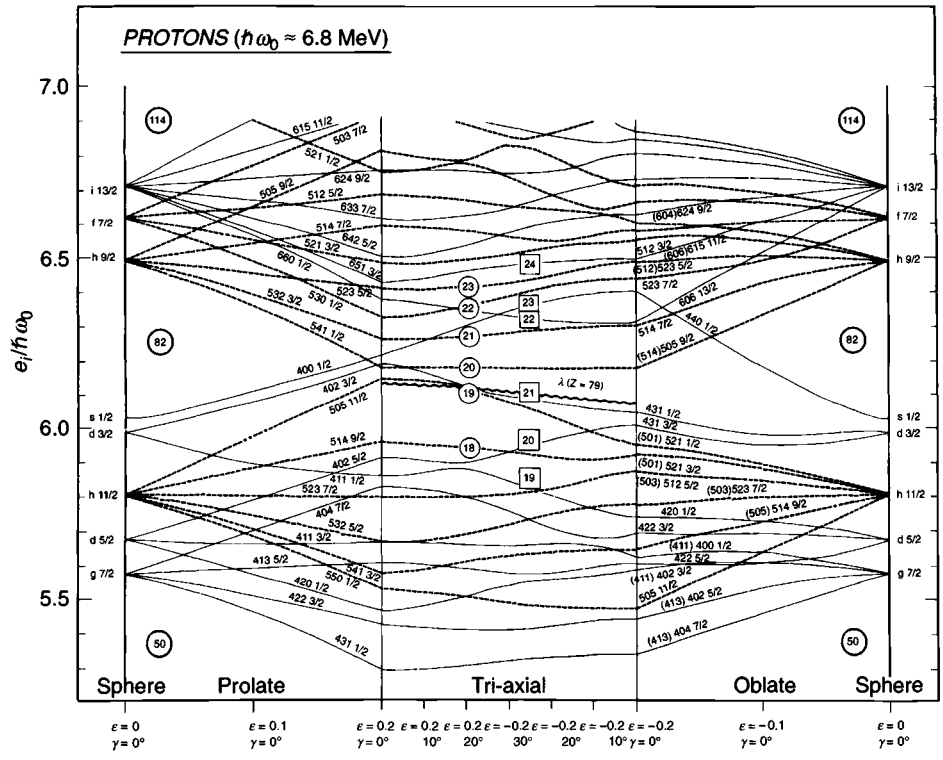

Fig. 8.7. Single-proton orbitals in the $Z \simeq 80$ region. The orbitals at the left edge and the right edge are identical and correspond to spherical shape. In between, ε and γ are varied in such a way that the left part of the figure is drawn for prolate shapes and ε-values up to 0.2, the middle part shows the orbitals for triaxial shape and in the right part of the figure, the orbitals corresponding to oblate shape are exhibited. The asymptotic quantum numbers for prolate and oblate shape, respectively, are given. At the small deformation of $\varepsilon = 0.2$, they are rather impure and in some cases, two alternatives are indicated. For γ-deformations, it is difficult to find any approximate quantum numbers, but the orbitals of different parity can be numbered from 'the bottom' as indicated in the figure. Furthermore, a calculated Fermi level, λ, (chapter 14) for $Z = 79$ is indicated by a wavy line (from C. Ekström *et al.*, 1989, *Nucl. Phys.* **A348**, 25).

are obtained from diagonalisation. An example of such energies, shown along a closed path in the (ε, γ)-plane, is provided in fig. 8.7. The orbitals are labelled by the asymptotic quantum numbers for oblate and prolate shape.

We will come back to the question of triaxial deformations in chapter 12. Now, we will, however, finish this chapter by discussing an operator method, which provides a concise method to calculate single-particle matrix elements in an oscillator basis.