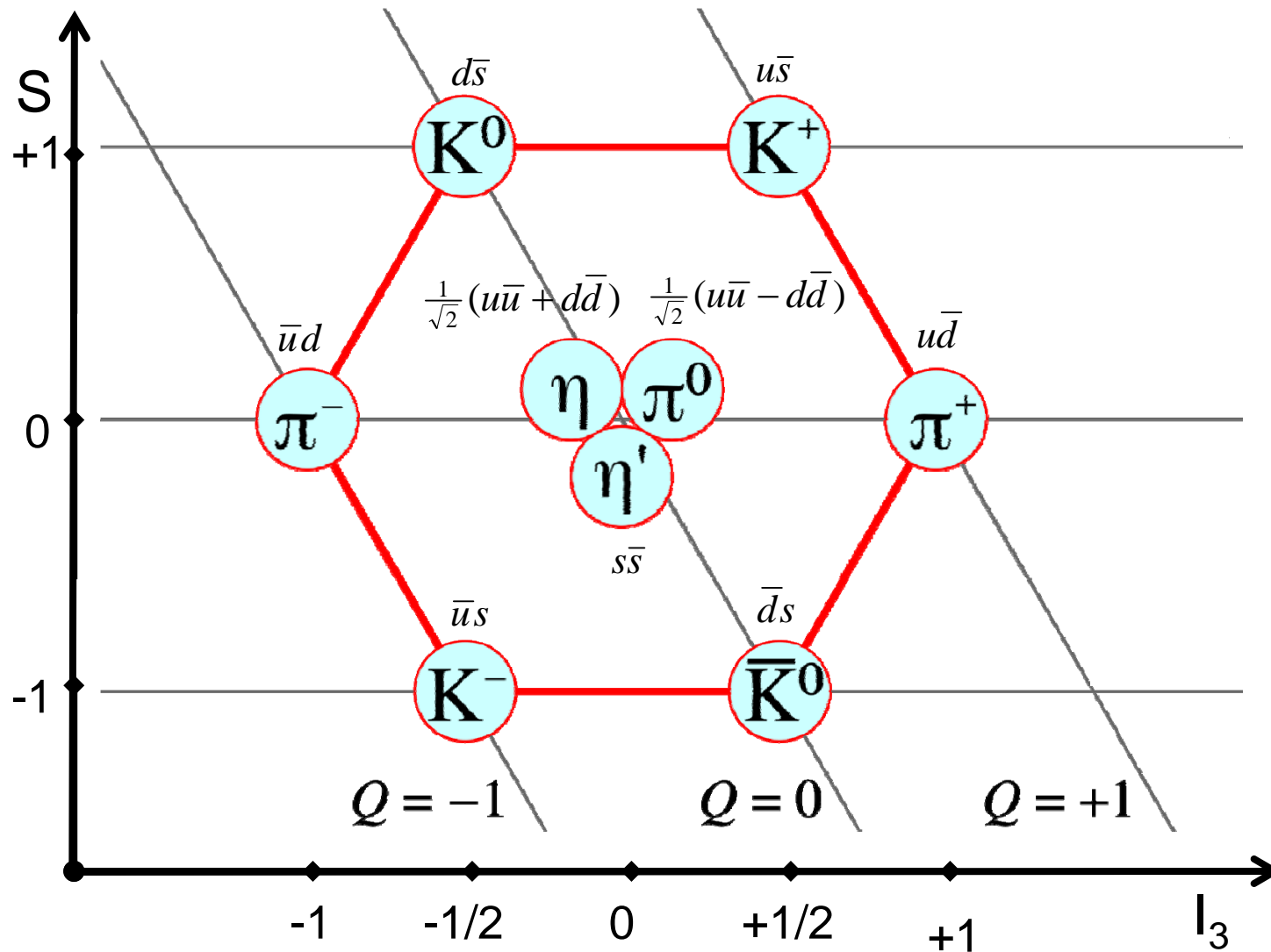


Outline

- Relativistic Kinematics
 - ▶ (4-momentum)² invariance, invariant mass
 - ▶ Hypothesis testing, production thresholds
 - ▶ Cross-sections, flux and luminosity, accelerators
 - ▶ Particle lifetime, decay length, width
- Classification of particles
 - ▶ Fermions and bosons
 - ▶ Leptons, hadrons, quarks
 - ▶ Mesons, baryons
- Quark Model
 - ▶ Meson and baryon multiplets
 - ▶ Isospin, strangeness, c, b, t quarks
- Particle Interactions
 - ▶ Colour charge, QCD, gluons
 - ▶ Virtual particles and range of forces
 - ▶ Strong and weak decays, conservation rules
 - ▶ Parity, charge conjugation, CP
 - ▶ Weak decays of quarks
 - ▶ Charmonium and upsilon systems
- Electroweak Interactions
 - ▶ Charged and neutral currents
 - ▶ W, Z, LEP experiments
 - ▶ Higgs and the future
- LHC Experiments
- Future - introduction to accelerator physics

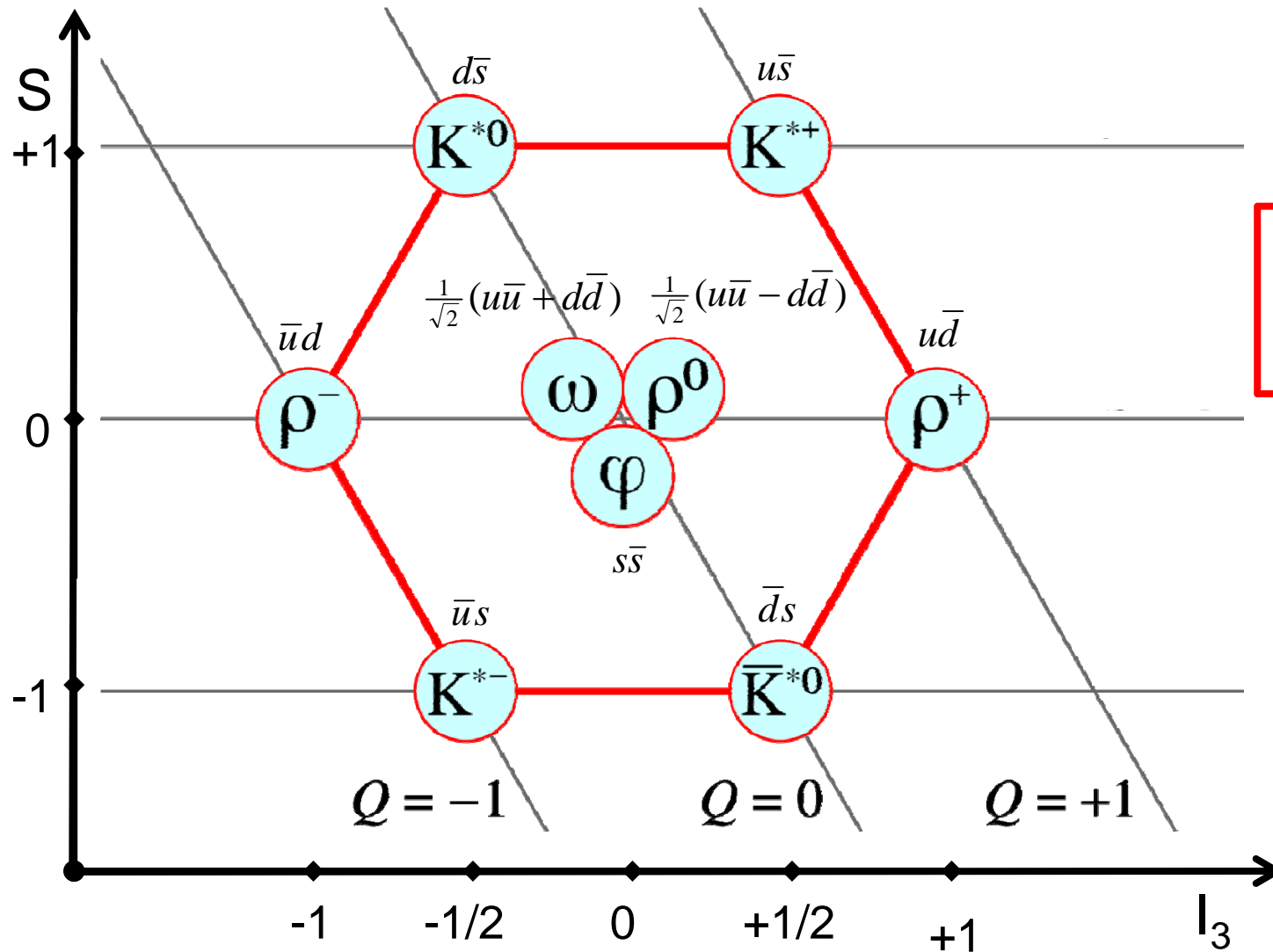
Please see web page for specific references to textbooks and brief reviews from PDG.

1S_0 Meson Nonet



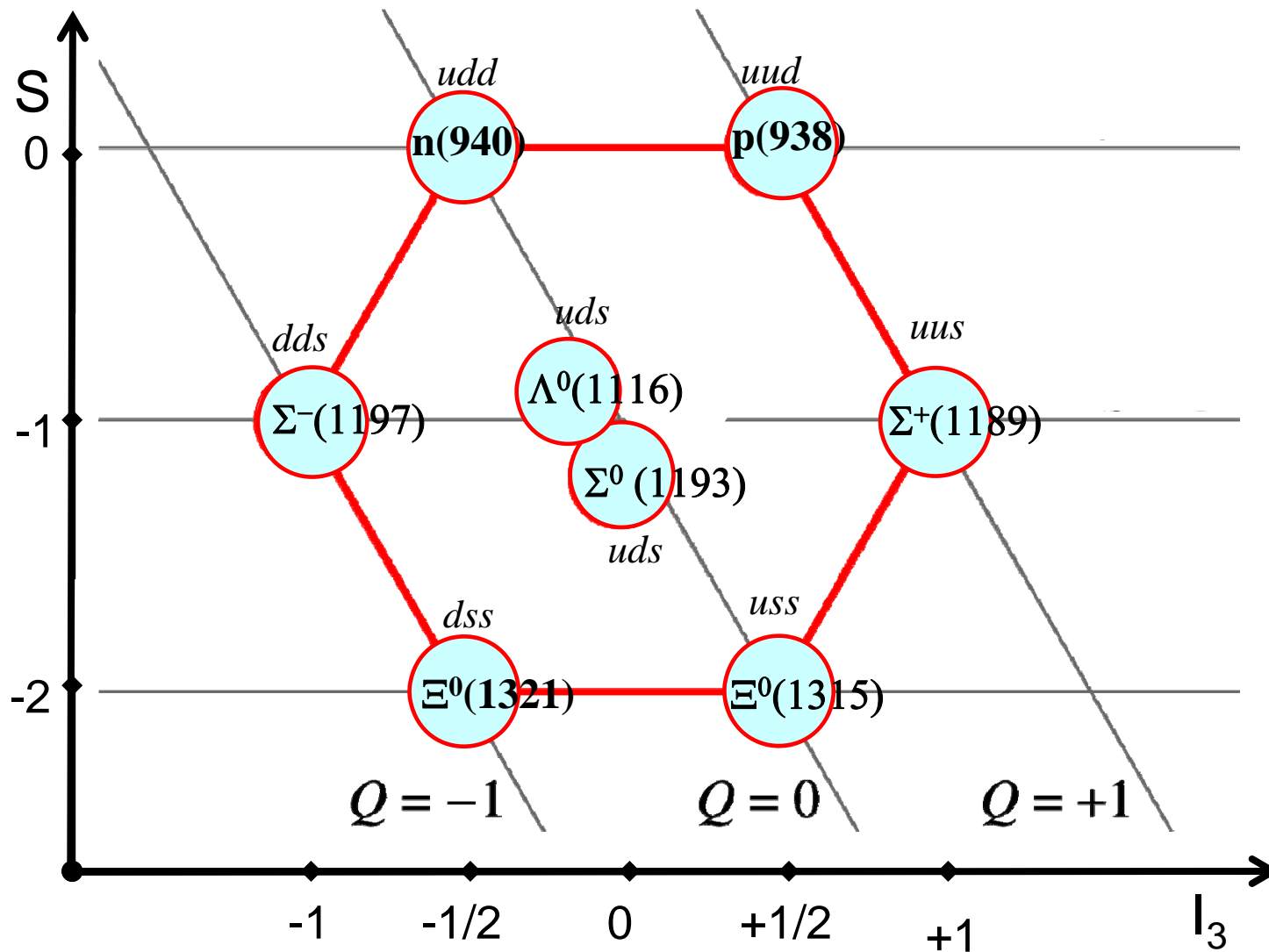
[adapted from http://en.wikipedia.org/wiki/File:Meson_nonet_-_spin_0.svg]

3S_1 Meson Nonet



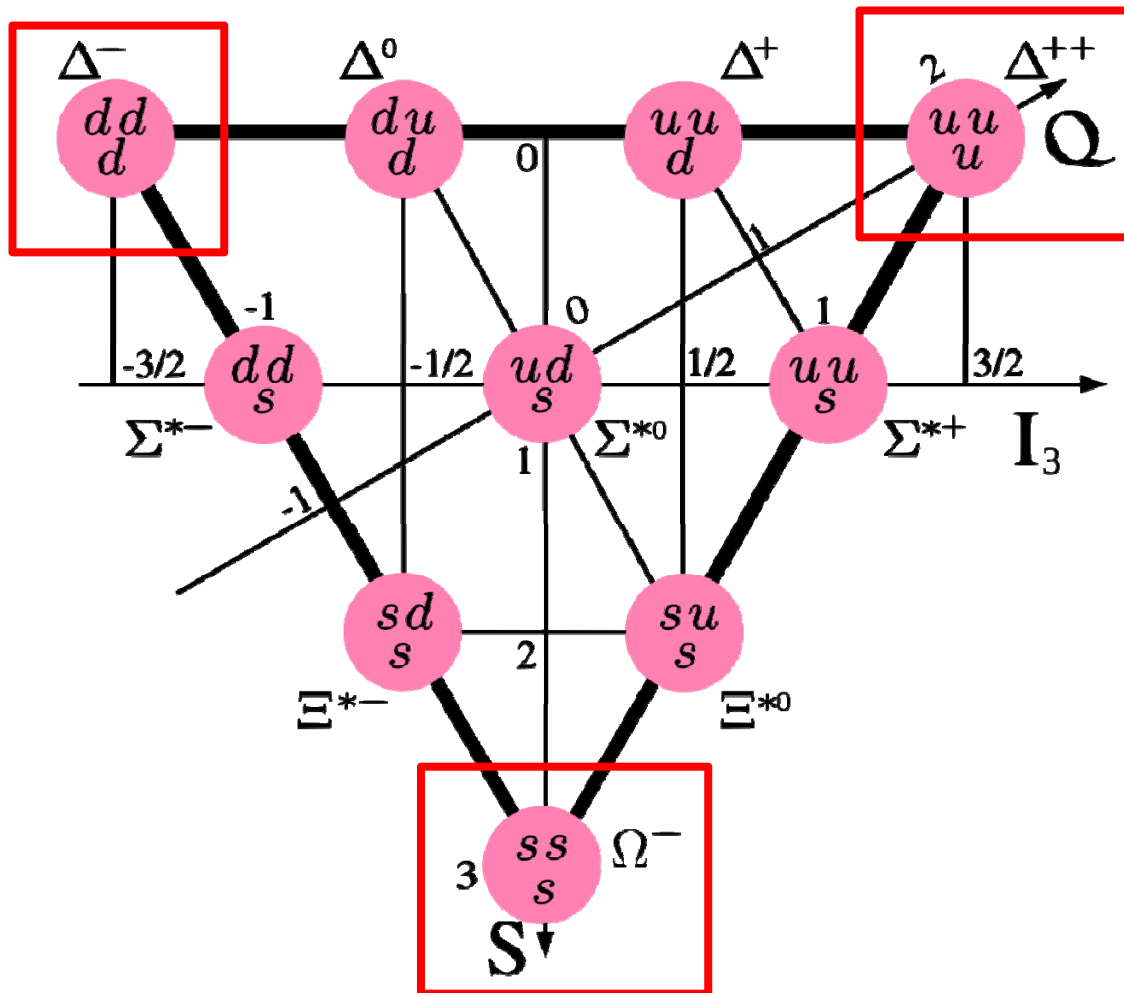
Same quark contents as in 1S_0 octet

J=1/2 Baryon Octet



[adapted from http://en.wikipedia.org/wiki/File:Meson_nonet_-_spin_1.svg]

J=3/2 Baryon Decuplet



Same valence quark as in J=1/2 octet, with new members