

5/17/16 Lecture 14 outline / summary

- Continue with approximate  $SU(3)_F$  global symmetry for the  $(u, d, s)$  quarks. Plot their  $T_3$  and  $T_8$  weights. Note  $Y = T_8(2/\sqrt{3}) = B + S$  and  $Q_{elec} = T_3 + Y/2$ .
- Discuss  $SU(3)$  representations, 1, 3,  $\bar{3}$ , 8, 6, 10 and various tensor products.
- The spectrum of mesons and baryons. The  $j = 0$  mesons (the pions and their cousins) in the 8. The  $j = 1$  mesons in the 8. The  $j = 1/2$  baryons (proton, neutron, and cousins) in the 8. The  $j = 3/2$  baryons in the 10, with the  $\Omega^-$  at  $S = -3$  (3 strange quarks), predicted by Gell Mann before it was discovered, and he correctly predicted its mass and magnetic moment.