

Ph 203 HW6

1. Bhaduri Ex. 1.7 → for this and the next problem you can use the 20-plet that we worked out in lecture for the wave functions instead of the 56-plet (since you don't need strange quarks here or in the next problem).

2. Bhaduri Ex. 1.9 → see above comment regarding 20-plet

3. In Lecture 13 we built a gluon from an SU(3) of 3 color charges (RGB=Red, Green, Blue). We did this by combining color and anti-color states to get an octet of colored gluons with Young tableau of



Now combine 2 gluons (as above) to make a glueball via



and use the Young Tableaux rules to determine the shapes and the number of states in the glueball multiplets. Hopefully, you'll find a colorless singlet since the glueball would be an observable particle like nucleons and mesons but with no net color.

4. Bhaduri Ex. 2.1

5. Bhaduri Ex. 2.15