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Physics 3710 – Problem Set #12

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In the following solid lines represent quarks or antiquarks and dotted lines represent gluons. Time increases upward.

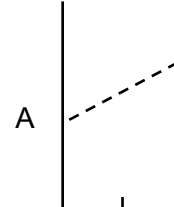
1. The gluon has colors $r\bar{g}$.

What quark or antiquark might it couple to at event A?
(2 possibilities)



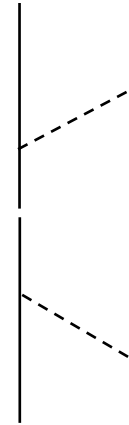
2. The gluon has colors $b\bar{r}$.

What quark or antiquark might it couple to at event A?
(2 possibilities)

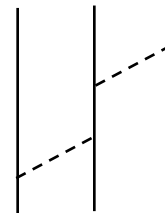


3. The in-state is a meson with quark colors $g\bar{g}$ (left-right).

The quark colors in the out-state are $b\bar{b}$. What are the colors of the gluon?



4. Suppose the in- and out- states are the same as in 3 but the diagram is flipped over. What are the colors of the gluon?



5. The in-state is a baryon with quark colors rgb (left-right). Label the colors of all particles before and after each vertex.