Lecture Series A — Problem Set 2

1. Show that moving a tag across an edge of multiplicity m changes $[T]$ by a factor of $(-1)^{m(r-m)}$ conclude that tags do not affect $[T]$ when r is odd.

2. Show that $[T]$ is invariant under the action of matrices A of the form:
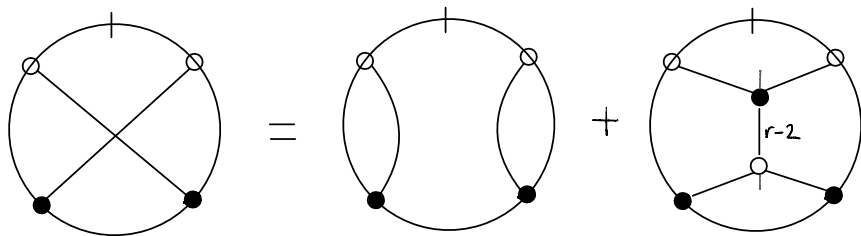
   (a) diagonal matrices of determinant 1.

   (b) $A = Id + E_{ij}$ ← matrix with single 1 in position (i,j) and 0 elsewhere

   This completes the proof that $[T]$ is an SL_r invariant.

3.

a) Show

b) Deduce that the set of web invariants of type $\underline{c}$ spans $\mathrm{Inv}_{SL_r}(V^{\underline{c}})$.