

Category $\mathcal{O}$ Exercises

August 8, 2017

1. (a) Draw the quantum polarized arrangement corresponding to the following data:

- The exact sequence

$$G = \mathbb{C}^* \rightarrow \mathbb{C}^3 \rightarrow \mathbb{C}^2 = F$$

where the first map is given by $t \mapsto (t, t, t)$ and the second map is given by $(z_1, z_2, z_3) \mapsto (z_2/z_1, z_3/z_1)$.

- The element $1 \in \mathfrak{g}^*$
- The element $(1, 2) \in \mathfrak{f}_{\mathbb{Z}}$

- (b) Draw the Gale dual arrangement.

2. Pick an arrangement.

- (a) Write the bounded/feasible sign vectors.
- (b) Determine the composition series for the Verma modules.