

VALLADOLID LECTURE 2 EXERCISE

DIANE MACLAGAN

Let $X = V(x + y + z + 1) \subseteq (\mathbb{C}^*)^3$, where \mathbb{C} has the trivial valuation.

- (1) Compute $\text{trop}(X)$ (Hint: Felipe gave you some hints)
- (2) Show that $\text{trop}(X)$ is balanced when each 2-dimensional cone is given weight 1.
- (3) Check that the facet-ridge hypergraph is 2-connected.
- (4) Choose a different polyhedral complex structure on $\text{trop}(X)$, and weight it by also giving every polyhedron weight 1. Check that this is still balanced.
- (5) If this is too easy, consider $V(x^3 + y^2 + x) \subseteq (\mathbb{C}^*)^3$, where $(\mathbb{C}^*)^3$ has coordinates x, y, z . Find $\text{trop}(X)$, find weights that make it balanced, and investigate the connectedness.