CMI Summerschool 2012 / Course Schicho
Exercises Part 5

Exercise 1. Show that every singularity is equivalent to an ideal-type singularity.

Exercise 2. The goal of the game MONOMOLY is to manipulate a given simplicial complex Γ with vertices labelled by $\mathbb{Q}_{\geq 0}$ so that the sum of all vertices in any face is less than 1. The only allowed operation is to subdivide a face by inserting a new vertex with label equal to the sum of the labels of vertices of the face minus 1.

Exercise 3. For the subhabitat $(V = \mathbb{A}^1, \_)$ of $(W = \mathbb{A}^2, \_)$, show that the following statements are true.

1. If A is closed, the $\mathrm{Extension}_1(A) = \mathrm{Extension}_2(A)$.
2. $\mathrm{Extension}_1(A)$ restricts properly to V, and $\mathrm{Restriction}(\mathrm{Extension}_1(A)) = A$.
3. If B restricts properly to V and B is closed, then $\mathrm{Extension}(\mathrm{Restriction}(B)) = B$.
4. The singular loci of $\mathrm{Extension}(A)$ and A are equal.
5. $\mathrm{Closure}(\mathrm{Extension}(\mathrm{Transform}(A))) = \mathrm{Closure}(\mathrm{Transform}(\mathrm{Extension}(A)))$.
6. $\mathrm{Closure}(\mathrm{Restriction}(\mathrm{Transform}(A))) = \mathrm{Closure}(\mathrm{Transform}(\mathrm{Restriction}(A)))$.