

CMI Summerschool 2012 / Course Schicho  
Exercises Part 6

**Exercise 1.** Find all mistakes on the distributed list of axioms.

**Exercise 2.** Prove that the axioms on the corrected list are fulfilled by the gallimaufries in the definitions.

**Exercise 3.** Find a set of generators for the ideal of all polynomial functions  $f : \mathbb{R}^3 \rightarrow \mathbb{R}$  vanishing on the unit circle such that the gradients at the points of the unit circle either vanish or are orthogonal to the Möbius strip.

**Exercise 4.** Does the ideal defined in Exercise 3 contain the equation of a complex nonsingular surface?