

SMALL CANCELATION: EXERCISE SHEET 10

NIMA HODA

- (1) Let X be a locally CAT(0) square or triangle complex.
 - (a) Prove that the 2-cells of X are immersed.
 - (b) Prove that no two 2-cells have the same attaching map.
 - (c) Prove that any reduced disk diagram of X is CAT(0).
- (2) Prove that locally CAT(0) triangle complexes are C(3)-T(6).
- (3) Prove that locally CAT(0) square complexes are C(4)-T(4).
- (4) Prove the local characterization of locally quadric complexes given in class.
- (5) Prove the metric graph theoretic characterization of quadric complexes given in class.
- (6) Let X be a simply connected C(3)-T(6) complex. Identify any pairs of 2-cells of X having the same boundary. Prove that the *thickening* of X obtained by spanning a simplex on each 2-cell of X is systolic.