Contents

1. Elementary Definitions and Observations
   1.1 3-Homogeneous Simplicial Complexes, 1
   1.2 Connectedness and Hyper Connectedness, 2
       1.2.1 Connectedness
       1.2.2 Hyper Connectedness
   1.3 The Incidence Quotients of Complexes, 4

2. The Equivalence Relation on the Set of Vertexes
   2.1 The Equivalence Relation on the Set of Vertexes, 6
   2.2 The Marriage of Incidence Quotients and Equivalence Relation on the Set of Vertexes, 15

3. Existence of Finite Cyclic Incidence Quotients
   3.1 Cyclic Complexes, 23
   3.2 Representation of Integers, 27
       3.2.1 Binary Expansion of Integers
       3.2.2 Bachmann-Farey’s Expansion of Integers
   3.3 Binary Trees and Forests, 30
   3.4 Finite Cyclic Incidence Quotients, 32
       3.4.1 Caps
       3.4.2 Finite Cyclic Incidence Quotients

4. Closures and Closed Complexes
   4.1 Closed Complexes, 37
   4.2 Combinatorial Properties of Closures, 38
   4.3 Incidence Quotients of Closed Complexes, 39
   4.4 Preserved Topological Properties in Induced Closed Complexes and the Types of Triangles, 41

References, 46