Abstract

Title: The classification of the 3-dimensional closed manifold by the 8 families and discussion of some classical problems.

We recall two very simple operations which consist in taking finite covering of a space, and when a finite group act freely, we consider the orbit space. This way, given a family $\mathbb{F}$ of spaces by apply these two operations in all possible way, we obtain a new family $L(\mathbb{F})$ which certainly contains the given family. It is known that the closed 3-manifolds have been divided into 8 families. We present these families using the naive procedure described above, where we try to have the set F as simple as possible. In more details, for each one of the 8 families, we provide a set $\mathbb{F}$ of 3-manifolds such that the given family is $L(F)$. One can exemplify this procedure for the classification of the surfaces. Then we discuss some classical problems which seems convenient to be treated in each family. For example, we present a more general formulation of the classical Borsuk-Ulam type theorem and the problem of classification of homeomorphism. At the end we expect to mention some results which was proved more recently.

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