Understanding Poincaré theorem

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Abstract

This paper is about understanding Poincaré theorem in the view of observation.

1 Introduction

Poincaré theorem was proved in 2003[1]. Apart from what has been noted, the theorem is about a question that:

> Consider a compact 3-dimensional manifold V without boundary. Is it possible that the fundamental group of V could be trivial, even though V is not homeomorphic to the 3-dimensional sphere?

With a question that why it is have to be of a universe, many questions arise.

1. Why does a compact 3-dimensional manifold V without boundary matter?
2. Why does the fundamental group of compact 3-dimensional manifold without boundary could be trivial?
3. Why does the homeomorphism matter?

2 What is a matter with Poincaré theorem?

2.1 Boundary matters

Manifold without boundary would be a field.

2.2 Fundamental group matters

Manifold with fundamental group would have a initial basis. So the manifold V has a initial basis. Generally it is referred as axis.

2.3 Homeomorphism matters

It would be seen as redundant that sphere has a boundary, the option itself releases the restriction that everything in manifolds should be defined by distinct boundary. It implies that there are field and non-field manifold.

3 Conclusion

What is a contraposition of Poincaré theorem?

> If arbitrary manifold V as fundamental group is homeomorphic and not trivial, then the manifold has a boundary.

This implies that everything that has a shape in a field (within observation) has a unique boundary.

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