Research Plan

(1) **Relationship between representation coverings and equivariant hyperbolic dynamical systems**

I will continue the study of the relationship between representation coverings and equivariant hyperbolic dynamical systems.

In particular, I want to obtain a theorem having the following form:

$$\begin{array}{c}\text{(Existence of representation coverings)}\\ \Updownarrow\\ \text{(Existence of equivariant dynamical systems).}\end{array}$$

There is a result of H. Aurbach which states that every compact connected Lie group is topologically generated by two element. Thus, we have two different hyperbolic dynamical systems. However, it seems difficult to "mix" these hyperbolic dynamical systems. To solve the problem, I will examine to strengthen the statement about the existence of representation coverings.

(2) **Existence of invariant Morse functions**

There is a result of Wesserman for the existence of a certain invariant Morse-Bott functions. However, there is no general theory about the existence of invariant Morse functions. I plan to study the existence of invariant Morse function as a continuation of the reserach plan (1).

(3) **GKM-theory and Morse theory**

I will research Morse theoretic interpretation of GKM-theory.