

Speaker: **Kawauchi, Akio**

Title: *A link group invariant of closed orientable 3-manifold*

Authors: Akio Kawauchi

Affiliations: Osaka City University

Abstract: In this talk, we consider the set \mathbf{X} of integral vectors of finite length as any well-ordered set, although a canonical well-order is in mind. Then for the set \mathbf{L} of (unoriented) types of links in the 3-sphere S^3 , we construct a map

$$\sigma : \mathbf{L} \longrightarrow \mathbf{X}$$

which is injective modulo split additions of trivial links. By using this map σ , we can consider \mathbf{L} as a well-ordered set. This well-order of \mathbf{L} leads to the concept of a minimal link type.

Let $\mathbf{L}^{\mathbf{sm}}$ be the subset of \mathbf{L} consisting of simple minimal link types. Let $\pi(\mathbf{L}^{\mathbf{sm}})$ be the set of isomorphism types of simple minimal link groups. Then we can show that the natural map $\pi : \mathbf{L}^{\mathbf{sm}} \rightarrow \pi(\mathbf{L}^{\mathbf{sm}})$ is bijective. Let \mathbf{M} be the set of unoriented types of closed connected orientable 3-manifolds. Our main theorem is stated as follows:

Theorem. A previously given well-order of \mathbf{X} induces an injective map

$$\mathbf{M} \xrightarrow{\alpha} \mathbf{L}^{\mathbf{sm}} \xrightarrow{\pi} \pi(\mathbf{L}^{\mathbf{sm}})$$

such that if we write $\alpha[M] = [L_M]$, then we have $[M] = [\chi(L_M, 0)]$ for the 0-surgery manifold $\chi(L_M, 0)$ of S^3 along the link L_M .

By taking \mathbf{X} with the canonical well-order, several types of closed orientable prime 3-manifolds are ordered and identified with the corresponding simple minimal link types.

The content of this talk is a growing up version of a part of the research announcement *Link corresponding to closed 3-manifold*.

(see <http://www.sci.osaka-cu.ac.jp/~kawauchi/index.htm>).