2009 年度 前期	対象学年	4 年	レベル	2	2 単位	専門科目・選択

【科 目 名】 Perspectives in Mathematical Sciences IV
Scissors Congruence and Hilbert's Third Problem

【担当教員】 Lars Hesselholt

【成績評価方法】 Grades based on attendance and written reports

【教科書および参考書】

[1] Johan L. Dupont, *Scissors congruence, group homology and characteritic classes*, Nankai Tracts in Mathematics, Vol. 1, World Scientific.

【講義の目的】 It has been known since ancient times that two polygons that have the same area can be divided into a finitely many pairwise congruent triangles. Hilbert, in his third problem at the ICM 1900, asked whether two polyhedra that have the same volume can be divided into finitely many pairwise congruent tetrahedra. Dehn proved within the same year that the answer is no: A cube and a tetrahedron of equal volume cannot be divided into finitely many pairwise congruent tetrahedra. Two polyhedra are called scissor's congruent if they can be divided into finitely many pairwise congruent tetrahedra. The question of how to parametrize the set of polyhedra up to scissor's congruence turns out to involve much of the modern mathematics developed in the twentieth century. We will discuss the solution to this question along with the modern mathematical structures involved.

【講義予定】 We discuss the scissors congruence problem and proceed from there.

【キーワード】 Scissors congruence, Hilbert's third problem, homology of groups.

【履修に必要な知識】 Knowledge of standard undergraduate algebra and linear algebra.

【他学科学生の聴講】

【履修の際のアドバイス】

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