科目ナンバリング	U-LAS12 20004 LE57						
授業科目名<英訳>	Theory of Special Relativity-E2 Theory of Special Relativity-E2			担当者所属職名・氏名	基礎物理学研究所 准教授 Antonio De Felice(アントニオ デフェリーチェ)		
群	自然科学科目群	分野(分類)	物理学(発展)		使用言語	英語	
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義（対面授業科目）
開講年度・開講期	2026・後期	曜時限	水2	配当学年	主として1・2回生	対象学生	全学向

[授業の概要・目的]

The aim of this lecture is to intoduce the basic concepts of Einstein's theory of relativity. First, the theory of special relativity will be explained in detail. After this, the basics of general relativity will be introduced in an elementary way. The lecture is supposed to be interactive.

[到達目標]

The students will learn the formalism needed to study special/general relativity.
They will learn a geometrical intuition in the theory of relativity.

[授業計画と内容]

I. Introduction and Historical backgrounds
II. Einstein's Principle of Relativity
III. Special Relativity and Lorentz Transformation
IV. Relativistic Mechanics
V. Interesting Examples of Lorentz Transformation
VI. Maxwell Equation and Lorentz Invariance
VII. Relativistic Momentum and Energy II: Four Vectors and Transformation Properties
VIII. General Relativity

In total, at most 14 classes will be offered (one for each week of the semester) plus one feedback meeting with the students.

[履修要件]

Fundamental Physics A　(recommended) , Fundamental Physics B (recommended)

[成績評価の方法・観点]

Evaluation method: 25%: mid term exam; 75%: final exam. No homework is given during the whole duration of the course.

[教科書]

Antonio De Felice 『Lecture notes (given in the class as a pdf file)』

[参考書等]

（参考書）

Hans C. Ohanian, Remo Ruffini 『Gravitation and Spacetime』 （Cambridge University Press, 2013）
Hans Stephani 『Relativity』 （Cambridge University Press, 2004）
Wolfgang Pauli 『Theory of Relativity』 （Dover Publications, 1958）

Theory of Special Relativity-E2(2)へ続く↓↓↓

Theory of Special Relativity-E2(2)

[授業外学修（予習・復習）等]

The students will be provided with the lecture notes of the course [as a pdf file in LMS and on kulasis]. They are supposed to study them, not only to review the work done in previous lectures but also to prepare for the upcoming ones.

[その他（オフィスアワー等）]

2 hours of office hours per week to be decided with students [usually taking place on Fridays at noon]. E-mail will be provided, so that the students can contact the teacher at any time.

[主要授業科目（学部・学科名）]

理学部