科目ナンバリング U-LAS12 20004 LE57												
授業科目名 Theory of Special Relativity-E2 Theory of Special Relativity-E2						担当者所 職名・氏	属基础	基礎物理学研究所 准教授 Antonio De Pelice(アントニオデフェリーチェ)				
群	自然科学科目群分			分野(分類)	物理					吏用言語	英語	
旧群	B群	単位数	2単位	週コマ数	1コ	1コマ :		業形態 講義		遠(対面授業科目)		
開講年度・ 開講期	^{開講年度・} 2025・後期 曜時限		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) a

[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 Polativity F2/2)
Theory of Special Relativity-E2(2)
The students will be provided with the lecture notes of the course [as a pdf file in PandA 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