

Krakowska Interdyscyplinarna Szkoła Doktorska

Opis przedmiotu/ course description

Przedmiot/ Course :	Wykład specjalistyczny z Oddziału Fizyki Teoretycznej (NO4) Specialist lecture from Division of Theoretical Physics
Moduł kształcenia/ Training module:	Moduł specjalistyczny
Okres realizacji/ Implementation period :	II rok, semestr letni
Język wykładowy/ Language:	język angielski/ English
Prowadzący/ Lecturer:	dr hab. Jarosław Kwapien, dr hab. Robert Kamiński, dr hab. Andreas van Hameren/Oddział Fizyki Teoretycznej (NO4)
Wymiar godzin przedmiotu/duration :	30 godzin
Forma prowadzenia zajęć/ Form of teaching :	Wykłady 30 godzin
Opis przedmiotu/ course content:	<p>Complex systems - physics, models, and empirical data analysis (10h) Complexity is a phenomenon that attracts growing attention as it is believed that, if properly described and quantified, it might allow us to understand empirical properties of a variety of systems that are beyond reach of a traditional reductionist approach, like financial markets and human brain. In this lecture, I will review different attempts to define complexity and discuss properties of complex systems, then I will describe how such systems are modeled, and which methods can be applied to analyze empirical data that come from complex systems' observation.</p> <p>Standard Model, elementary particles and symmetries (10h) The Standard Model will be described and discussed. The particles will be presented depending on their masses, internal structure, type of interactions and decay they undergo. Symmetries and all particle binding relationships as well as breaking or maintaining parity will be discussed.</p> <p>Feynman graphs (10h) A self-contained introduction to the topic in the title, assuming only knowledge about Lagrangian mechanics, quantum mechanics, classical field theory, and special relativity.</p>
Efekty uczenia się wg 8PRK zgodnie z	EU1,EU2,EU3,EU8,EU13

Programem kształcenia KISD/ learning outcomes at level 8 of the PRK according to the KISD Training Program:	
Forma weryfikacji efektów uczenia się/ Method of verification of learning outcomes:	esej/ essay
Wymagania wobec uczestników/ Requirements for participants:	