

Modultitel:	Amplitudes (Advanced topics in Field Theory)
Engl. Übersetzung	Amplitudes (Advanced topics in Field Theory)
Modulnummer/-kürzel:	PHY-MV-BE-T26
Zuordnung	<i>Th. Physik</i>
Semester	<i>Wintersemester</i>
Verwendbarkeit, Modultyp und Zuordnung zum Curriculum	• MSc Physik: Wahlpflichtmodul
Voraussetzungen für die Teilnahme:	Verbindlich: <i>keine</i> Empfohlen: Basic knowledge in string theory and quantum field theory.
Modulverantwortliche(r):	R. Boels, J. Louis
Lehrende:	Mitglieder des Lehrkörpers aus dem Fachbereich Physik
Sprache:	<i>Englisch</i>
Qualifikationsziele:	<i>After the course the student should be prepared for a research project such as a master or a PhD thesis in string theory</i>
Inhalt:	

	Scattering amplitudes are a central object of study in both field and string theory. The birth of string theory for instance is generally taken to be the publication of Veneziano's famous scattering amplitude, originally intended to describe the scattering of two pions. Veneziano arrived at formula as an application of the analytic S-matrix philosophy: that one should be able to determine amplitudes from their analytic properties. In field theory this point of view was superseded by path integral methods in field theory in the seventies. Surprisingly, this philosophy has resurfaced in recent developments in modern quantum field theory, inspired by Witten's "twistor string" picture of perturbative gauge theory. In this lecture series an introduction will be given to recent developments in the analytic computation of scattering amplitudes. Topics to be discussed include for example string scattering in flat backgrounds, $N=4$ SYM at weak and strong coupling, KLT relations and perturbative gravity amplitudes and many more. Emphasis will be on techniques with a wide range of applicability in both string and field theory.	
Lehrveranstaltungen und Lehrformen:	<i>Wie viele SWS für V und/oder Ü und/oder S und/oder P?</i> • (V) 2 • (Ü)	
Studien-/ Prüfungsleistungen	Prüfungsart: <i>oral exam</i> Sprache der Prüfung: Englisch	
Dauer	1 Semester	
Häufigkeit des Angebots	<i>every second winter term</i>	
Literatur:	Lecture notes and several hand outs.	

