

August 23, 2007 YK

Physics 626 Syllabus, Fall 2007, Instructor Yuri Kamyshkov

Class meets at Room 226G in Ayres Hall on TR 11:10 – 12:25

This file will be updated. Please, see current version at http://web.utk.edu/~kamyshko/P626/P626_cyllabus.pdf

#	Month	Date	Topic	Reading Chapter #	Problems	Comments	
1	8	23	Particles and Forces. PDG. Natural Units	1			
2	8	28	Special Relativity. Lorentz Invariance	Landau-2, § 1-14	HW1 due		
3	8	30	Lagrangian, Currents, Interactions	2			
4	9	4	Lagrangian, introduction to Feynman Diagrams	2.9+, 3	HW2 due		
5	9	6	Gauge Invariance	4			
6	9	11	Spin and spinors	5+	HW3 due		
7	9	13	Spinors and Dirac equation.	5+			
8	9	18	C, P, T operators; left-right spinors	6	HW4 due		
9	9	20	SM Lagrangian.	6			
10	9	25	$SU(1) \times SU(2) \times SU(3)$	7	HW5 due		
11	9	27	EW interactions of quarks and leptons, CC and NC	7			
12	10	2	Masses and Higgs Mechanism	8	HW6 due		
13	10	4	Masses and Higgs Mechanism	8			
14	10	9	Higgs Mechanism (continued)	9++	HW7 due		
15	10	11	S-matrix, phase space, x-sections, decay width	10, 11+		<i>Midterm take home</i>	
16	10	16	Polarization density matrix, simple processes calculations	10, 11+	HW8 due		
17	10	18	Muon decay	15			
18	10	23	Z and W decays, parameters of SM, what is measured	16	HW9 due		
19	10	25	Quantum numbers of fermions and hadrons	17			
20	10	30	QCD Lagrangian, QCD processes, jets, Structure funct.	+	HW10 due		
21	11	1	Quark states, chiral symmetry, pi-decay, anomalies	18			
22	11	6	Weak decays of quarks, CKM-matrix	19, 22 +	HW11 due		
23	11	8	Running coupling constants, unification of forces	20, 26, 27			
24	11	13	Supersymmetry, Dark Matter search	27, 28	HW12 due		
25	11	15	LQG models, String Theory	27, 28			
26	11	20	Neutrinos, masses, oscillations, beyond SM	21,23 +	HW13 due		
27	11	27	Baryogenesis, B, L, and B-L nonconservation	24			
28	11	29	CP violation, search for CPT violation	12, 13	HW14 due		
29	12	4	Relic neutrinos	+		<i>Last class</i>	
	12	6	<i>Final take-home due at 12:15 pm on December 6</i>				