

revised 2007.november.11

Physics 448, Fall 2007 Mark Saffman
 MWF 8:50-9:40, 2241 Chamberlin

week	lecture	day	date	topic	Reading B&D	HW out	HW due
1	1	W	5.sep	Introduction - quantum vs. classical mechanics	Ch. 1	1	
	2	F	7.sep	two-slit experiment, entanglement	Ch.2, App. B		
2	3	M	10.sep	deBroglie waves, Schrodinger Equation *			
	4	W	12.sep	Fourier analysis			
	5	F	14.sep	Heisenberg uncertainty principle	Ch.3	2	1
3	6	M	17.sep	wave packets			
	7	W	19.sep	stationary states			
	8	F	21.sep	measurements		3	2
4	9	M	24.sep	Potential barriers I - flux, reflection, transmission *			
	10	W	26.sep	Potential barriers II - tunneling	Ch.4		
	11	F	28.sep	Potential barriers III - Ramsauer effect		4	3
5	12	M	1.oct	energy quantization I - harmonic oscillator			
	13	W	3.oct	energy quantization II - finite square well			
	14	F	5.oct	energy quantization III - double well	Ch. 5	5	4
6	15	M	8.oct	delta fn. potential, Principles of QM I, states and operators			
	16	W	10.oct	Principles of QM II, states and operators			
	17	F	12.oct	Principles of QM III	Ch. 6		5
7	18	M	15.oct	operator algebra solution of Harmonic Oscillator			
	19	W	17.oct	continuous basis, measurements and quantum no cloning			
		F	19.oct	MIDTERM		6	
8	20	M	22.oct	Two-state systems I, ammonia maser			
	21	W	24.oct	ammonia with electric field, stark effect			
	22	F	26.oct	ammonia maser		7	6
9	23	M	29.oct	Rabi flopping with AC field			
	24	W	31.oct	Unitary time evolution, generalized commutation relations	Ch. 7		
	25	F	2.nov	Ehrenfest's theorem, CSCO		8	7
10	26	M	5.nov	Stern-Gerlach I - classical picture			
	27	W	7.nov	Stern-Gerlach II - magnetic moment operators	Ch. 8		
	28	F	9.nov	Stern-Gerlach III - quantum solution		9	8
11	29	M	12.nov	Angular Momentum I	Ch. 10		
	30	W	14.nov	Angular Momentum II, orbital angular mom.			9
		F	16.nov	MIDTERM II			
12	31	M	19.nov	Orbital angular mom., atoms I	Ch. 11		
	32	W	21.nov	atoms II		10	
		F	23.nov	Thanksgiving			
13	33	M	26.nov	atoms III			
	34	W	28.nov	atoms IV	Ch. 9		
	35	F	30.nov	Spin-orbit interaction, g-2		11	10
14	36	M	3.dec	Perturbation methods I			
	37	W	5.dec	Perturbation methods II			
	38	F	7.dec	Perturbation methods III			11
15	39	M	10.dec	Entanglement and EPR I	Ch. 14		
	40	W	12.dec	Bell's theorem			
	41	F	14.dec	Quantum cryptography and teleportation			
				FINAL 17.dec 2:45-4:45 pm			

Grading
 HW 0.5
 Midterm 0.2
 Final 0.3