

Spec Ref	Topic	TAP episode	comments
3.1.1 D(cont)	satellite dish, reflector and dipole at focus		
	frequency ranges used for Earth-satellite transmission		
	diffraction of radiation from satellite dish		
	half-beam width θ from $\sin\theta = \lambda/b$		
	satellite footprint		
3.1.2 A	Brownian motion, gaseous diffusion	601	
	deflection of electron beams	413	
	plum pudding model alpha particle scattering	521	
	protons, neutrons & electrons, discovery of proton & neutron	533	
	alpha α and beta β^- and beta β^+ decays	510, 512	
B	ultraviolet catastrophe, quantum physics explanation		
	photoelectric effect $E = hf = hc/\lambda$, $hf = \phi + Ek(max)$	502	
	electron diffraction, de Broglie wavelength, $\lambda = h/mv$	506	
C	Big Bang theory, microwave background radiation	705	
	Heavy particle, Light particle, Radiation and Matter eras		
	possible fates of the Universe.	705	
	pair production, Photons, particles, antiparticles.	534	
	hadrons: baryons and mesons	533	
	leptons, electron, muon, tau neutrinos & antiparticles	533	
	quarks and antiquarks, deep inelastic scattering	538, 539	
	conservation of charge, baryon number and strangeness	533, 535	
	Higgs particle	518-1	
D	exchange particles, Photons, W and Z, Gluons, Gravitons	536	mention only
	the 4 forces		
E	ionisation and excitation, Line spectra, energy levels	501	
	$hf = E_1 - E_2$, the electron-vol	501	
	star properties from spectra, intensity and apparent magnitude	701	
	Black body radiation, Wien's Law		
	luminosity of a star as total power radiated		
	main classes of stars, O, B, A, F, G, K, M, classification by temp		
	stellar evolution, Hertzsprung-Russell diagram		
	Doppler effect, $\Delta\lambda/\lambda = \Delta f/f = v/c$, Red-shift	702	
	Hubble law $v = Hd$	704	
quasars, galaxies, mass of galaxy from orbital speed, dark matter	705		