

Physics/Eng Phys 2H04 Assignment #1

Due: January 25, 2002

Total marks available: 50

Part 1 (Stowe):	1.4	(3 marks)
	1.5	(3)
	1.7	(3)
	3.2	(3)
	3.6	(5)
	4.4	(5)
	4.8	(5)
	4.9 a-d	(15)

Part 2 Additional Problem (8 marks):

Members of a large collaboration that operates a giant proton-decay detector in a salt mine near Cleveland, Ohio, detected a burst of 10 neutrinos in their apparatus coincident with the optical observation of the explosion of the Supernova 1987A.

- If the average number of neutrinos detected in the apparatus is 3 per day, what is the probability of detecting a fluctuation of 10 or more in one day?
- In fact, the 10 neutrinos were all detected within a 10-minute period. What is the probability of detecting a fluctuation of 10 or more neutrinos in a 10-minute period if the average rate is 3 per 24 hours?
- What is your assessment of the result?