

2017 Ph H1 Q7

Section: Our Dynamic Universe

Topic: The Expanding Universe




A student makes three statements:

- I. Stellar objects emit radiation over a wide range of frequencies.
- II. The peak wavelength is longer for hotter objects than for cooler objects.
- III. At all frequencies, hotter objects emit more radiation per unit surface area per unit time.

Which of these are correct?

- A. I only
 - B. III only
 - C. I and II only
 - D. I and III only
 - E. I, II and III
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Evaluation:

- I 
- II  (hotter \rightarrow shorter λ)
- III 

Final Answer:

D

Revision Tips:

- **Wien's Law:** $\lambda_{\text{max}} \propto \frac{1}{T}$
- **Stefan–Boltzmann Law:** hotter objects emit more radiation overall

Stars have a **continuous spectrum**, not just one frequency