Abstract Submitted
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Two forms of Wien's displacement law LIANXI MA, Blinn College — There are two forms of Wien's displacement law that can be derived from Planck's equation. They are:

$$\lambda_m T = 2.8977685 \times 10^{-3} \quad \text{m} \cdot \text{K} \tag{1}$$

$$\frac{f_m}{T} = 5.879 \times 10^{10} \quad \text{Hz/K} \tag{2}$$

Where λ_m and f_m are wavelength and frequency corresponding to the maximum intensity I_m of radiation of the black body, and T is the temperature of the black body. Suppose that we have known a black body's temperature, then λ_m and f_m can be obtained from Eqs. (1) and (2). For example, the Sun's surface temperature, $T = 5778$ K, then according to Eqs. (1) and (2), we get

$$\lambda_m = 5.015 \times 10^{-7} \quad \text{m}$$

And

$$f_m = 3.397 \times 10^{14} \quad \text{Hz}$$

However, if we apply $c = \lambda f$, and take $c = 3{\times}10^8$ m/s, then from $\lambda_m = 5.015{\times}10^{-7}$ m, we get $f = 5.982{\times}10^{14}$ Hz, which is not the f_m obtained from eq. (2). In this paper, I have shown the reason why.

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