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The radiancy, R_T, is defined as the total energy emitted per unit time per unit area from a blackbody at thermodynamic temperature T. It was first stated empirically in 1879 in the form given by

$$R_T = \sigma T^4$$

where where σ is called the Stefan-Boltzmann constant. Which of the following is the unit for σ?

A

W m^{-2} K^4

B

kg s^{-3} K^{-4}

C

J s m^{-2} K^{-4}

D

J s^{-1} m^{-2} K^4