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Determination of a Wien's like law for the exergy of radiation

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It has been recently showed that the entropy of radiation, like the energy, follows a Wien's like law for the determination of the wavelength of maximum entropy. However, in practical applications where second law analysis is applied, there is a more useful concept known as exergy, a measurement of the maximum obtainable work. In constrained environments where the whole spectrum is not available, the knowledge of which wavelength is more efficient (i.e. contains more exergy) can be useful for science, telecommunications or instrument design. In a blackbody radiation system, the exergy is dependent on two variables, the emitter body at temperature T and the receiver body at temperature T0, and in this paper, we prove that the maximum of the exergy of radiation can be expressed as a Wien's like law depending on the two variables. We provide the mathematical expression to determine the wavelength of maximum exergy directly, which is reduced to the Wien's displacement energy law for the limiting case when the temperature of the receiver body temperature is zero. In order to illustrate the differences between energy and exergy distributions, we present its use in different atmospheric scenarios, astrophysics, and biology.