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Prof. Dr. Enrico Sciubba
Editor-in-Chief
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My co-authors and I are pleased to submit an original research article to *Energies*

TITLE

**The Energy and Exergy of Light
With Application to Societal Exergy Analysis**

AUTHORS

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STATEMENT

I attest that this manuscript is our original work, that it has not been previously published in a journal, in whole or in part, and that it is not under consideration by any other journal. All authors are aware of, and accept responsibility for, the manuscript. The authors have no conflicts of interest.

SIGNIFICANCE OF OUR WORK AND WHAT NEW INFORMATION IS DESCRIBED IN THE MANUSCRIPT

In the field of societal exergy analysis, the exergetic efficiency of electric lamps has been approximated by an energy efficiency, resulting in much confusion to date. In this paper, we develop a new, exact method for calculating the exergetic efficiency of lamps, based on recent results in the fields of radiation thermodynamics and photometry. The exact method (a) is free of any assumptions for the value of the maximum luminous efficacy, (b) uses a non-unity spectral exergy-to-energy ratio, and (c) allows choices for the spectral luminous weighting function, which converts broad-spectrum electromagnetic radiation to light. The exact method exposes assumptions inherent to the conventional method and leads to a better approximation of lamp exergetic efficiency, when needed.

WHY DO THE AUTHORS THINK THE PAPER IS IMPORTANT AND HOW IT FITS THE SCOPE OF ENERGIES?

This paper is important, because it clarifies a methodological issue in the growing field of societal exergy analysis, and it concludes with specific recommendations for societal exergy practitioners.

This paper fits the scope of *Energies*, because it matches many *Energies* subject areas listed at <https://www.mdpi.com/journal/energies/about>. In particular, the following subject areas are directly relevant to our article:

- Exergy,
- Thermodynamics,
- Energy forms, and
- Energy transformation.

We have worked hard to provide a concise, novel article that we believe will be of significant interest to your readership. We trust that you will agree that the manuscript is both novel and important and hope you will accept its submission to *Energies*.

Yours sincerely,

A handwritten signature in black ink, reading "Matthew Kuperus Heun". The signature is fluid and cursive, with the first name "Matthew" being the most prominent.

Matthew Kuperus Heun