

POSSIBILITY UNIQUE COMBINATION FOR FIRST AND SECOND LAW OF THERMODYNAMICS

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Dear Editor-in-Chief

Since that second law of thermodynamics has a very special role in all branches of science, this law has been established with different approaches and formulations (Sheehan, 2007). Although Carnot introduced the irreversible process as well as irreversibility concept, Clausius formulated the second law of classical thermodynamics inspired by them as well as introducing entropy quantity for thermodynamical cycles (Sheehan, 2007). Clausius formulation defines thermodynamical entropy as a time direction for all physical processes (Kostic, 2011). In fact, entropy and its significance are becoming an important challenge between scientists (Lieb and Yngvason, 1999). Also, general branches of physics define entropy with general approaches that using them, the second law of classical thermodynamics can be extracted (Shahsavari and Moradi, 2021). In all these general approaches, energy and, generally energy levels have the main role for extracting the second law of thermodynamics. According to this, some new branches of physics try to use the energy concept to extract a special definition of entropy for investigating a special range of problems directly (Shahsavari, 2021; Shahsavari and Moradi, 2020). For example, mechanothermodynamics uses mechanical and thermal energy for the definition of MTD entropy for investigating MTD systems (Sosnovskiy and Sherbakov, 2017). As another example, Energy Structure Theory introduces the energy structure equation that can consider the effects of the second law in physical processes from the perspective of the energy space as well as activated energy components (Shahsavari, 2021). This theory also established a new formulation for the energy conservation principle that has the effects of the second law of thermodynamics in its structure brightly (Shahsavari and Moradi, 2021; 2020).

Finally, due to that the Energy Structure Theory shows that the energy conservation principle and the effects of the second law of thermodynamics can bring up in one relation together without any limiting supposition, the author think that it is very possible that a unique law to be established from the first and second laws of thermodynamics that these two laws can be extracted from that and vice versa. Perhaps, it can be extracted using the definition of a new combination of physical quantities as energy and entropy. In fact, a new space for governing equations will be needed. Using the energy components of the system as well as a new approach developed from the General Physics perspective, the new space may be extracted. The new space may be a scalar space of energy components developed a using general point of view of the second law effects on the structure of the physical processes. Therefore, if the effects of the second law of thermodynamics on the energy structure of the physical systems to be extracted and new space based on the energy components of the system to be built, a unique combination law of the first and second law of thermodynamics may be extracted.

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