

Analytical Principles and the Evolution of Physical Laws

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Abstract

In preceding accounts [1,2] we have advanced a retarded-advanced sub-dynamics transcending standard probabilistic formulations providing a wide-range of interpretations. The contradiction between time reversible microscopic physical laws and the irreversible nature of thermodynamical equations are examined from this standpoint. The subjective nature of statistical mechanics in connection with a theoretical formulation relative to a given level of description, is also re-examined. A complex symmetric ansatz, incorporating both time reversible and time irreversible evolutions discloses the evolution of the basic laws of nature and reveals new orders of organization. Examples are given from the self-organizational behaviour of complex biological systems as well as background dependent relativistic structures including Einstein's laws of relativity, the time delay, the gravitational redshift and the perihelion movement of Mercury. A promising solution to the present conundrum is provided by a specific informity rule in combination with a Gödelian like rule of decoherence code protection. The theory gives an interesting cosmological scenario in absolute agreement with the second law.

[1] E. Brändas, *Mol. Phys.* **108**, 215 (2010).

[2] E. Brändas, *Int. J. Quant. Chem.* **111**, 215 (2011).