

**Abstract for GR-TR Conference on Statistical Mechanics  
and Dynamical Systems**

Talk Invited

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**The Second Law For the Transitions Between the  
Non-equilibrium Steady States**

G. Baris Bagci<sup>1\*</sup>, G. Baris Bagci<sup>1</sup>, U. Tirnakli<sup>1</sup>, Juergen Kurths<sup>2</sup>

<sup>1</sup> Department of Physics, Faculty of Science, Ege University, 35100 Izmir, Turkey

<sup>2</sup> Department of Physics, Humboldt University Berlin, Newtonstr. 15, 12489  
Berlin, Germany

<sup>3</sup> Potsdam Institute for Climate Impact Research, P.O. Box 60 12 03, 14412  
Potsdam, Germany

\* Electronic Address: `baris.bagci@ege.edu.tr`

We show that the system entropy change for the transitions between non-equilibrium steady states arbitrarily far from equilibrium for any constituting process is given by the relative entropy of the distributions of these steady states. This expression is then shown to relate to the dissipation relations of both Vaikuntanathan and Jarzynski [?] and Kawai, Parrondo and Van den Broeck [?] in the case of energy-conserving driving.

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[1] S. Vaikuntanathan and C. Jarzynski. *EPL* **87** 60005 (2009).

[2] R. Kawai, J. M. R. Parrondo and C. Van den Broeck *Phys. Rev. Lett.* **98** 080602 (2007).