SCIENTIFIC REPORT
for the research grant PN-III-P4-ID-PCE-2020-0647 (UEFISCDI)

Statistical Thermodynamics Approach to Complex Systems

Phase #1 summary

Within the activities from 2021, all the proposed objectives have been achieved. In accordance with the project implementation plan, the databases that are used in theoretical modeling studies have been built. These databases can be consulted on the project website: https://atom.ubbcluj.ro/stacos/

An oral presentation was given at an international conference in the field of economics:
Z. Neda, T.S. Biro, G. Toth, I. Gere, Sz. Kelemen, *The growth and reset model for social inequalities*, **11-th Polish Symposium on Physics in Economy and Social Sciences**, 01.07-03.07 2021, online webpage: https://indico.fis.agh.edu.pl/event/69/

Beyond the planned objectives the following activities have been realized:

1. A WOS article (IF: 3.26) with acknowledgement to the project has been published in the strict topic of the project:
I. Gere, S. Kelemen, G. Toth. TS Biro and Z. Neda, *Wealth distribution in modern societies: Collected data and a master equation aproach*, **Physica A - Statistical Mechanics and its Applications**, vol 581, art. no. 126194 (2021)

2. A WOS article (IF: 3.52) with acknowledgement to the project has been accepted for publication in a topic related to this project:
A. Gergely, Cs. Paizs, R. Totos and Z. Neda, *Oscillations and collective behavior in convective flows*, **Physics of Fluids**, accepted for publication 2021,
preprint: https://arxiv.org/abs/2109.10286

3. A WOS article (IF: 3.56) has been submitted for publication in the strict topic of the project:
I. Gere, Sz. Kelemen, TS Biro and Z. Neda; *Wealth distribution in cities. Transition from socialism to capitalism in view of exhaustive wealth data and a master equation approach*, submitted to **Frontiers in Physics**

We believe that all the 2021 objectives have been met.