ATTRACT Fellow evaluation
FINAL REPORT[i] OF THE EVALUATION COMMITTEE

I. Name of the ATTRACT Fellow

Etienne Fodor

Targeted professorial rank

Associate Professor

II. Faculty or Interdisciplinary Centre

☒ FSTM ☐ FDEF ☐ FHSE ☐ SnT ☐ LCSB ☐ C^2DH

Department :
FSTM - Department of Physics and Materials Science

III. Composition and date of appointment of the Attract Evaluation Committee

[redacted]

The Evaluation Committee has been appointed by the Rector on 15th July 2024.

IV. General appreciation

Scientific Production	Outstanding	Very good	Good	Insufficient	Unable to judge
Publications, communications	☒	☐	☐	☐	☐
Knowledge and technology transfer	☒	☐	☐	☐	☐
External funding	☒	☐	☐	☐	☐

Others (please specify under additional comments)	☐	☐	☐	☐	☐

Additional comments:

All the crosses marked above correspond to the maximal mark.

Etienne Fodor has an outstanding publication record and has secured external funding to build a gourd of excellent students and junior researchers. He has been active in outreach. See more details below.

Benchmarking	**Outstanding**	**Very good**	**Good**	**Insufficient**	**Unable to judge**
Performance compared to other scientists in a similar career stage)	☒	☐	☐	☐	☐
Contribution to the research unit and/or department	☒	☐	☐	☐	☐
International reputation/standing	☒	☐	☐	☐	☐

Additional comments:

All the crosses marked above correspond to the maximal mark.

Etienne Fodor has an excellent reputation, as shown by the numerous invitations to present his results in international conferences. He has collaborated intensively with his group members and other senior members of the Department. More details in the detailed analysis below.

His performance compares extremely well to the one of other researchers of similar academic age.

V. Detailed analysis

a. Research and scholarship

In the words of [redacted] and [redacted], Etienne Fodor is a highly accomplished theoretical physicist who has made exemplary contributions to research, teaching, and service within the academic community.

Etienne Fodor's research focuses on the study of active matter and nonequilibrium systems, with a combination of analytical and computational techniques, pushing the boundaries of traditional statistical mechanics.

Two of his main objectives have been to describe how microscopic activity translates into macroscopic phenomena, such as collective motion and phase separation, and to quantify how active systems deviate from equilibrium. To achieve this, he has introduced novel methods from stochastic thermodynamics to understand how energy is consumed and converted in these systems, allowing for new insights into time-reversal symmetry breakdown, and the optimization of work and heat for engine design.

In addition to these questions, Etienne Fodor has proposed the idea of using pulsating particles to mimic some biological systems. In these particles, the diameter is another degree of freedom and this brings about a wealth of new non-equilibrium states. Furthermore, he is also adapting ideas from optimal control theory to achieve target states of active systems with minimal dissipation. In collaboration with his junior associates, he is currently developing these two lines of research.

Etienne Fodor has been successful in obtaining competitive external funding, which have enabled him to form a research group of considerable size. During the four-year period (relevant for the tenure), he has collaborated with eminent scientists in the field, as well as with members of his own research group. His involvement in an international collaboration network has bolstered his reputation as a dynamic and reliable researcher.

Etienne Fodor has more than 40 publications to his credit, with about half of those completed since joining the faculty at the University of Luxembourg. Some of these publications have extremely high impact. Notably, he has published three papers in Physical Review Letters, two in Physical Review X, and a highly relevant review in Annual Review of Condensed Matter Physics. In the last four years, Etienne Fodor's research output has been prolific, and his productivity has shown a sharp increase over time.

In conclusion, his work has significantly influenced theoretical physics, providing insights applicable to biological systems and synthetic active materials. The topics he has chosen to study are all highly timely directions at the forefront of current research in the field of active matter and out of equilibrium systems.

b. Teaching and Doctoral Education

The members of the committee have attended several research presentations by Etienne Fodor, and based on the clarity of his expositions, we conclude that he must be a highly effective and engaging teacher.

Etienne Fodor has introduced two novel courses on non-equilibrium soft and active matter in the master's and PhD programs in Luxembourg. He has also taught at the University of Liege.

Etienne Fodor has supervised six PhD students and three master's students. His mentoring style appears to be highly inclusive and hands-on, clearly demonstrating a dedicated and effective effort to help his mentees develop into independent researchers. He has also been very active in serving on PhD thesis committees.

c. Knowledge and technology transfer

Etienne Fodor has welcomed high school students into his research group and has actively built connections with local schools through outreach activities, including giving talks and lectures aimed at disseminating the principles of nonequilibrium physics. He also plans to participate in the upcoming Science Festival in Luxembourg. Given that Étienne Fodor primarily works in theoretical physics and has not yet collaborated with experimentalists, direct technology transfer is not immediate, and any practical applications will require further development. However, this is directly related to his specialization in theory and should not be viewed negatively. Additionally, his research has garnered attention through several press releases.

d. Administration and management

Etienne Fodor has been engaged in a variety of departmental and interdepartmental activities, demonstrating his commitment to build new initiatives and improve student training. These activities have included: participation in attempts to secure center funding, work on development of doctoral training curriculum, representing Physics on a multi-departmental initiative to develop a cross-disciplinary curriculum, active participation in department meetings and retreats. This sums up to an excellent degree of engagement that makes him a great departmental citizen and a valuable colleague.

He has attracted a good number of students and postdoc to his group and worked with them to secure fellowship for their support. He maintains an open door policy that encourages discussion and exchanges and appears to have served him well.

VI. Recommendation of the Evaluation Committee

Should the candidate be promoted to the next professorial level?

☒ Yes

☐ No

VII. Justification of the recommendation

This report is based on the evaluations of two external referees, [redacted] and [redacted] as well as the ones of the five members of the committee, [redacted].

Etienne Fodor has held an ATTRACT fellowship since 2020 and is now ready to be considered for tenure. After careful evaluation of the dossier, the committee concludes, unanimously, that Etienne Fodor should be granted a tenured Associate Professor position at the University of Luxembourg. We give support to this proposal in the remainder of this report, describing his research, teaching, administration and activities.

VIII. Names and signatures of the Evaluation Committee members

The signatories confirm that the evaluation has been carried out in line with the provisions on conflicts of interest as laid out in the University of Luxembourg Evaluation Guidelines.

9/15/2024

[redacted]

[redacted]

Note:

This document will be disclosed to the candidate and the Faculty Dean/ Director of Interdisciplinary Centre as part of the feedback process.