



# YANN-EDWIN KETA


Postdoctoral researcher





## Education

2020-2023  
**PhD in Physics**  
Université de Montpellier   
Under the joint supervision of  
Ludovic Berthier and Robert L. Jack.

2016-2018  
**MSc in Physics** *High honours*  
École normale supérieure de Lyon   
Specialisation in computational  
physics, soft matter, and statistical  
physics.



2015-2016  
**BSc in Physics** *High honours*  
École normale supérieure de Lyon 

2013-2015  
**Classes préparatoires aux grandes  
écoles (PCSI/PC\*)**  
Lycée Lakanal, Sceaux 

2018-2019 (Gap year)  
**MA in Social sciences** *1<sup>st</sup> year*  
École normale supérieure de Lyon 

## Skills

### Programming

Python , C/C++, GNU/Linux , Git,  
symbolic computation (SageMath).

Molecular dynamics, parallelisation  
on CPU and GPU (OpenMP, HOOMD),  
biased path ensemble algorithms.

### Languages


Français (French) – Native speaker   
English – Fluent   
Nederlands (Dutch) – Beginner 

## Interests

- \* Extreme music.
- \* Free software, open knowledge.
- \* Environment protection.
- \* French and non-French literature.


## Research

Oct 2023 **Postdoc: “Computational models of cell sheets”**

- Present Instituut-Lorentz for Theoretical Physics,  
Universiteit Leiden 

**Supervisor:** Silke Henkes

Sep 2020 **PhD: “Collective dynamics in model active matter”**

- Sep 2023 Laboratoire Charles Coulomb, UMR 5221 CNRS,  
Université de Montpellier   
Simons Collaboration on *Cracking the Glass Problem*

**Supervisors:** Ludovic Berthier (Montpellier, Cambridge),  
Robert L. Jack (Cambridge)



SIMONS  
FOUNDATION

## ENS-funded internships

Oct 2019 **“Active work in systems of self-propelled particles”**

- July 2020 Department of Applied Mathematics and Theoretical Physics,  
University of Cambridge   
Laboratoire Matière et Systèmes Complexes, UMR 7057 CNRS,  
Université de Paris 

**Supervisors:** Robert L. Jack, Michael E. Cates (Cambridge),  
Frédéric van Wijland (Paris)




Jan 2018 **“Simple model of active particles”**

- Jul 2018 Stewart Blusson Quantum Matter Institute,  
University of British Columbia 

**Supervisor:** Jörg Rottler




May 2017 **“Numerical analysis of jamming criticality for  
spheroidal particles”**

- Jul 2017 Institutionen för fysik, Umeå universitet 

**Supervisor:** Peter Olsson




Jun 2016 **“Leidenfrost drop impacts on surfaces with micromet-  
ric defects”**


- Jul 2016 Institut Lumière Matière, UMR 5306 CNRS,  
Université Claude Bernard Lyon 1 


**Supervisors:** Quentin Ehlinger, Christophe Ybert





## Publications


Y.-E. Keta, J. U. Klamser, R. L. Jack, and L. Berthier, “Emerging mesoscale flows and chaotic advection in dense active matter”, *arXiv*, [DOI:10.48550/arXiv.2306.07172] (2023) [DOI:10.48550/arXiv.2306.07172].  arXiv:2306.07172

Y.-E. Keta, R. Mandal, P. Sollich, R. L. Jack, and L. Berthier, “Intermittent relaxation and avalanches in extremely persistent active matter”, *Soft Matter* **19**, 3871–3883 (2023) [DOI:10.1039/D3SM00034F].  arXiv:2212.09836

Y.-E. Keta, R. L. Jack, and L. Berthier, “Disordered collective motion in dense assemblies of persistent particles”, *Physical Review Letters* **129**, 048002 (2022) [DOI:10.1103/PhysRevLett.129.048002].  arXiv:2201.04902







Y.-E. Keta, É. Fodor, F. van Wijland, M. E. Cates, and R. L. Jack, “Collective motion in large deviations of active particles”, *Physical Review E* **103**, 022603 (2021) [DOI:10.1103/PhysRevE.103.022603].  arXiv:2009.07112

Y.-E. Keta and P. Olsson, “Translational and rotational velocities in shear-driven jamming of ellipsoidal particles”, *Physical Review E* **102**, 052905 (2020) [DOI:10.1103/PhysRevE.102.052905].  arXiv:2006.05305

T. Marschall, Y.-E. Keta, P. Olsson, and S. Teitel, “Orientational Ordering in Athermally Sheared, Aspherical, Frictionless Particles”, *Physical Review Letters* **122**, 188002 (2019) [DOI:10.1103/PhysRevLett.122.188002].  arXiv:1806.01739

Y.-E. Keta and J. Rottler, “Cooperative motion and shear strain correlations in dense 2D systems of self-propelled soft disks”, *EPL* **125**, 58004 (2019) [DOI:10.1209/0295-5075/125/58004].




## Conferences

- Jan 2024 **NWO Physics**  
NH Koningshof, Veldhoven   
Contributed talk, "Disordered collective motion in dense and persistent active matter".
- Dec 2023 **Computational Advances in Active Matter**  
Lorentz Center, Universiteit Leiden   
Invited short contribution, "How do dense systems of large-persistence self-propelled particles relax?".
- Dec 2022 **Active days EUTOPIA, Challenges in Active Matter**  
CY Cergy Paris University   
Contributed talk, "Disordered collective motion in dense and very persistent active matter".
- Nov 2022 **GDR IDE "Interaction, Disorder, Elasticity"**  
Université Grenoble Alpes   
Contributed talk, "Intermittent active dynamics at infinite persistence".
- Jun 2022 **Active & Intelligent Living Matter Conference**  
Erice, Sicily   
Poster.
- Jun 2022 **Beg Rohu Summer School 2022**  
Quiberon, Brittany   
"Out of Equilibrium Dynamics". Summer school. Poster.
- Feb 2022 **Edwards Centre for Soft Matter Mini-Conference**  
University of Cambridge   
Contributed talk, "Disordered collective motion in dense assemblies of persistent particles".
- Oct 2021 **UCA Fall program on Complex Systems 2021**  
Université de Nice   
"Mobility, self-organization and swimming strategies". Summer school.
- Mar 2021 **APS March Meeting**  
Online   
Contributed talk, "Collective motion in large deviation of active particles".

## Refereeing

- 2022 **Nature Communications**
- 2022 **Scientific Reports**
- 2022 **Physical Review E**
- 2022 **SciPost**

## Teaching

- 2022 **"Physics for life sciences", "Python for sciences" (undergraduates)**  
Université de Montpellier 
- 2018-2019 **Oral interrogator (Physics, Chemistry, Mathematics)**  
2016-2017 Lycée du Parc, Institution des Chartreux, Lycée La Martinière Diderot (Lyon) 
- 2015 **Volunteer tutor (Physics, Chemistry, Mathematics)**  
- 2017 ENSeigner association, École normale supérieure de Lyon 

## Responsibilities

- 2023 **Co-organisation of the Soft & Living Active Matter (SLAM) seminar**  
- Present Universiteit Leiden 