






# YANN-EDWIN KETA

Postdoctoral researcher

-  November 1995
-  French/EU citizen
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-  yketa.xyz
-  github.com/yketa



## 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), HTML/JS/CSS,  $\LaTeX$ .  
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: “Physical models of cell sheets”**

- Present Instituut-Lorentz for Theoretical Physics,  
Universiteit Leiden 

**Supervisor:** Silke Henkes

Sep 2020 **PhD: “Emergence of disordered collective motion in dense systems of isotropic self-propelled particles”**  
- Sep 2023

Laboratoire Charles Coulomb, UMR 5221 CNRS,  
Université de Montpellier   
Simons collaboration on *Cracking the Glass Problem*

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



## ENS-funded internships

Oct 2019 **“Large deviations of active 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 **“Glassy behaviour in phase-separating active matter”**

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

**Supervisor:** Jörg Rottler




May 2017 **“Jamming criticality of spheroids”**


- Jul 2017 Institutionen för fysik, Umeå universitet 


**Supervisor:** Peter Olsson





## Publications


Y.-E. [Keta](#) and S. Henkes, “Long-range order in two-dimensional systems with fluctuating active stresses”, *arXiv* (2024) [DOI:10.48550/arXiv.2410.14840].  arXiv:2410.14840


Y.-E. [Keta](#)<sup>\*</sup>, J. U. Klamser<sup>\*</sup>, R. L. Jack, and L. Berthier, “Emerging Mesoscale Flows and Chaotic Advection in Dense Active Matter”, *Physical Review Letters* **132**, 218301 (2024) [DOI:10.1103/PhysRevLett.132.218301].  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

- Oct 2024 **Journées de la Matière Condensée (Condensed Matter Days)**  
Aix-Marseille Université, Marseille   
Contributed talk, "Fluctuations in dense active matter".
- Apr 2024 **Interdisciplinary challenges in non-equilibrium physics: from soft to active, biological and complex matter**  
Max-Planck-Institut für Physik komplexer Systeme, Dresden   
Invited talk, "Fluctuations in dense active matter".
- 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".
- Jun 2022 **Active & Intelligent Living Matter Conference**  
Erice, Sicily   
Poster.
- Feb 2022 **Edwards Centre for Soft Matter Mini-Conference**  
University of Cambridge   
Contributed talk, "Disordered collective motion in dense assemblies of persistent particles".
- Mar 2021 **APS March Meeting**  
Online   
Contributed talk, "Collective motion in large deviation of active particles".




## Refereeing

- \* Nature Communications
- \* Physical Review E
- \* Scientific Reports
- \* SciPost
- \* Soft Matter

## Responsibilities

- 2023 **Co-organisation of the "Smart, Living, and Active Matter" seminar**  
- Present Universiteit Leiden   
Hosts international speakers between 1 and 4 times a month.

## Teaching

- 2024 **"Statistical Physics" (master's level)**  
Universiteit Leiden   
Teaching assistant.
- 2022 **"Physics for life sciences", "Python for sciences" (bachelor's level)**  
Université de Montpellier   
Teaching assistant.
- 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 