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基本信息

性别 男
民族 汉族
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出生年月 1989年12月
现职位 博士后, 加州大学圣巴巴拉分校, 美国.

学习经历

2019–至今 **博士后**, 理论物理, 加州大学圣巴巴拉分校, 美国.
合作导师: M. Cristina Marchetti教授

2015–2019 **博士**, 理论物理, 莱顿大学, 荷兰.
导师: Luca Giomi教授

2012–2015 **硕士**, 理论物理, 北京师范大学
导师: 郑志刚教授

2008–2012 **学士**, 应用物理学, 北京邮电大学.

研究方向

软（活性）物质、生命物质的力学及统计力学

代表作 (*共一)

[1] **Z. You**, D.J.G. Pearce, A. Sengupta, and L. Giomi, "Geometry and Mechanics of Microdomains in Growing Bacterial Colonies", **Phys. Rev. X** 8(3), 031065 (2018).

[2] **Z. You**, D.J.G. Pearce, A. Sengupta, and L. Giomi, "Mono- to Multilayer Transition in Growing Bacterial Colonies", **Phys. Rev. Lett.** 123, 178001 (2019).

[3] **Z. You**, A. Baskaran, and M. C. Marchetti, "Nonreciprocity as a generic route to traveling states", **Proc. Natl. Acad. Sci. U.S.A.** 117(33), 19767–19772 (2020).

[4] **Z. You**, D.J.G. Pearce, and L. Giomi, "Confinement-induced Self-organization in Growing Bacterial Colonies", **Sci. Adv.** 7(4), eabc8685 (2021).

[5] R. Adkins*, I. Kolvin*, **Z. You***, S. Witthaus, M. C. Marchetti, Z. Dogic, "Dynamics of active liquid interfaces", **Science**, under review.

研究经历

2019–至今 **博士后**, **加**州大学圣巴巴拉分校

- **Physics with broken Newton's 3rd Law.**
  - Nonreciprocity as a generic route to traveling states.
  - Nonreciprocity-induced inertia in binary mixtures.
  - Statistical mechanics where Newton's 3rd law is broken.
- **Mechanics and statistical mechanics of activity-powered interfaces.**
  - Activity-powered interfacial fluctuations.
  - Activity-induced wetting in structured fluids.
- **Vortex phase separation in active nematics.**
- **Defect dynamics in active nematics: a Newtonian picture for defect 'particles'.**

2015–2019 **博士**, 莱顿大学

- **Geometry and mechanics of microdomains in growing bacterial colonies.**
  - Statistical geometry of growing bacterial colonies.
  - Mechanics of growing bacterial colonies: growth-induced active stress.
  - Modeling growing bacterial colonies as active nematics.
- **Mono-to-multilayer transition in growing bacterial colonies.**
  - Mechanical theory: the transition is both deterministic and stochastic.
  - Statistical theory: how to predict bacterial invasion to the third dimension.
- **Confinement-induced self-organization in growing bacterial colonies.**
  - Anisotropic stress promotes global alignment in bacterial colonies.
  - Growing bacterial colonies a smart material.
  - Control bacterial growth with mechanical stress.
- **Statistical properties of autonomous flows in 2D active nematics.**
  - Measuring active stress in a system of growing rods.

2012–2015 **硕士**, 北京师范大学

- **Collective behavior of animal groups with leaders.**
  - Noise facilitates leading in animal groups with metastable states.
  - Effective leaders in animal groups: why larger groups need less portion of leaders.
- **Order in chaos: periodic time correlation in chaotic maps.**

2010–2012 **学士**, 北京邮电大学

- **毛细管光散射的理论与应用研究.**

毕业论文

博士 *Growth-induced self-organization in bacterial colonies* （英文）.

导师: Luca Giomi教授

硕士 基于*Couzin*模型的集群行为研究

导师: 郑志刚教授

学士 毛细管散射的理论及应用研究 (北京邮电大学优秀学士学位论文)

导师: 蒋达娅教授

期刊论文(*共一)

[11] S. Pokawanvit, Z. Chen, **Z. You**, S. Shankar, L. Angheluta, M. C. Marchetti, M. Bowick, "Activity-induced reorientation of topological defects in nematic liquid crystals", **in preparation.**.

[10] **Z. You**, F. Caballero, and M. C. Marchetti, "Vorticity phase separation and defect lattices in isotropic active nematics", **in preparation**.

[9] R. Adkins*, I. Kolvin*, **Z. You***, S. Witthaus, M. C. Marchetti, Z. Dogic, "Dynamics of active liquid interfaces", **Science**, under review.

[8] **Z. You**, D.J.G. Pearce, and L. Giomi, "Confinement-induced Self-organization in Growing Bacterial Colonies", **Sci. Adv.** 7(4), eabc8685 (2021).

[7] **Z. You**, A. Baskaran, and M. C. Marchetti, "Nonreciprocity as a generic route to traveling states", **Proc. Natl. Acad. Sci. U.S.A.** 117(33), 19767–19772 (2020).

[6] **Z. You**, D.J.G. Pearce, A. Sengupta, and L. Giomi, "Mono- to Multilayer Transition in Growing Bacterial Colonies", **Phys. Rev. Lett.** 123, 178001 (2019).

[5] L.M. Lemma, S.J. Decamp, **Z. You**, L. Giomi, and Z. Dogic, "Statistical Properties of Autonomous Flows in 2D Active Nematics", **Soft Matter** 15, 3264 (2019).

[4] **Z. You**, D.J.G. Pearce, A. Sengupta, and L. Giomi, "Geometry and Mechanics of Microdomains in Growing Bacterial Colonies", **Phys. Rev. X** 8(3), 031065 (2018).

[3] Q. Xu, W. Tian, **Z. You**, and J. Xiao, "Multiple beam interference model for measuring parameters of a capillary", **Appl. Opt.** 54(22) 6948-6954 (2015).

[2] **Z. You**, D. Jiang, J. Stamnes, J. Chen, and J. Xiao, "Characteristics and applications of two-dimensional light scattering by cylindrical tubes based on ray tracing", **Appl. Opt.** 51(35), 8341-8349 (2012).

[1] **Z. You**, D. Jiang, Z. Hou, and J. Xiao, "Analysis of light scattered by a capillary to measure a liquid's index of refraction", **Am. J. Phys.** 80(8), 688-693 (2012).

会议报告

2022 Nonreciprocity as a generic route to traveling and oscillatory states (**invited**), APS March Meeting invited session, Chicago, USA.

2021 Activity-powered liquid-liquid interface (**invited**), Seminar at Institute of Natural Sciences, Shanghai Jiao Tong University (online), China.

2021 Growth-induced self-organization in bacterial colonies(**invited**), Colloquium: Challenges and Opportunities in Complex System and Statistical Physics (online), China.

2021 Nonreciprocity as a generic route to traveling and oscillatory states (**invited**), KITP conference: Non-Equilibrium Universality, Santa Barbara, USA

2021 Theory of activity-powered interfaces (**invited**), SLAAM Seminar at UC Merced, Virtual, USA.

2021 Theory of activity-powered interfacial fluctuations, APS March Meeting, Virtual, USA.

2020 增殖诱发菌落自组织（**受邀**），非线性科学理论与交叉研讨会（线上会议），华中科技大学.

2020 Nonreciprocity as a generic route to traveling states, KITP Conference: Symmetry, Thermodynamics and Topology in Active Matter, Santa Barbara, USA.

2019 Mono-to-multilayer transition in growing bacterial colonies, Physics@Veldhoven, Veldhoven, Netherlands.

2019 Role of confinement in growing bacterial colonies, APS March Meeting, Boston, USA.

2018 Role of cell growth in the self-organization of bacterial colonies, DRSTP PhD Day, Utrecht, Netherlands.

2016 Geometry and mechanics of growing bacterial colonies, APS March Meeting, Baltimore, USA.

获奖情况

2019 **国家优秀自费留学生奖学金**

2014 **一等奖**, 第八届全国高等学校物理实验教学研讨会教学论文评比

2013 **一等奖**, 北京师范大学*2012-2013*研究生奖学金

2012 **一等奖**, 北京市大学生物理实验竞赛

教学经历

2019-至今 指导两位研究生进行科研, 加州大学圣巴巴拉分校.

2016-2018 助教, 软物质与生命物质理论, 莱顿大学.

2013-2014 助教, 普通物理, 北京师范大学.

社会服务

担任Nature Nanotechnology、Physical Review Fluid审稿人。

联系人

M. Cristina Marchetti 加州大学圣巴巴拉分校物理系, *cmarchetti@ucsb.edu*.

Luca Giomi 莱顿大学洛仑兹研究所, *giomi@lorentz.leidenuniv.nl*.

Daniel Pearce 日内瓦大学物理系, *daniel.pearce@unige.ch*.