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Forces and symmetries in cells and tissues

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Publications

- (1) **Eckert, J.**, Ladoux, B., Giomi, L., Schmidt, T. (2022). Hexanematic crossover in epithelial monolayers depends on cell adhesion and cell density. *bioRxiv* 2022.10.07.511294.
- (2) Hoffmann, L. A., Carenza, L. N., **Eckert, J.**, and Giomi L. (2022). Theory of defect-mediated morphogenesis. *Science Advances* 8, eabk2712.
- (3) Armengol-Collado, J.-M.*, Carenza, L. N.*, **Eckert, J.***, Krommydas, D.*, and Giomi, L. (2022). Epithelia are multiscale active liquid crystals. *arXiv:2202.00668*.
- (4) Rodrigues de Mercado, R., van Hoorn, H., de Valois, M., Backendorf, C., **Eckert, J.***, and Schmidt, T.* (2022). Characterization of cell-induced astigmatism in high-resolution imaging. *Biomed. Opt. Express* 13, 464-473.
- (5) **Eckert, J.***, Abouleila, Y.*, Schmidt, T., and Mashaghi, A. (2021). Single Cell Micro-Pillar-Based Characterization of Endothelial and Fibroblast Cell Mechanics, *Micro* 1, 242-249.
- (6) Arslan, F. N.*, **Eckert, J.***, Schmidt, T., and Heisenberg, C.-P. (2021). Holding it together: when cadherin meets cadherin. *Biophysical Journal* 120, 4182-4192.
- (7) **Eckert J.**, van Loon, J. J. W. A., Eng, L. M., and Schmidt T. (2021). Hypergravity affects cell traction forces of fibroblasts. *Biophysical Journal* 120, 773-780.
- (8) Woodcock, E. M., Girvan, P., **Eckert, J.**, Lopez-Duarte, I., Kubánková, M., van Loon, J. J. W. A., Brooks, N. J., and Kuimova, M. K. (2019). Measuring Intracellular Viscosity in Conditions of Hypergravity. *Biophysical Journal* 116, 1984-1993.

* Equal contribution

Curriculum Vitae

- From 2023 **Postdoctoral research position**
Alpha Yap Lab – Institute for Molecular Bioscience, University of Queensland, Australia
- 2018 – 2022 **Ph.D. in mechanobiology | cell- and tissue mechanics**
Thomas Schmidt Lab – Physics of Life Processes, Leiden Institute of Physics, Leiden University, The Netherlands
- 08/2021 – 01/2022 Visiting student & **EMBO Scientific Exchange Fellow**
Benoît Ladoux / René-Marc Mège Lab – Cell Adhesion & Mechanics, Institut Jacques Monod - Université Paris Diderot / CNRS, France
- 10/2015 – 09/2018 **M.Sc. in Physics**
Technische Universität Dresden, Germany
- Specialization: Soft condensed matter and biological physics
- Thesis: 'Influence of Hypergravity on Cell Traction Forces of 3T3 Fibroblasts'
- 07/2017 – 08/2018 Internship
Thomas Schmidt Lab – Physics of Life Processes, Leiden Institute of Physics, Leiden University, The Netherlands
- Master thesis project in collaboration with with TU Dresden and ESA/ESTEC
- Funding: ERASMUS+ of the European Union

- 07/2017 – Internship
01/2018 Physical Science Instrument Section, Mechatronics & Optics Division, Mechanical Engineering Department, Directorate of Technology, Engineering and Quality, **European Space Agency (ESA)/ European Space Research and Technology Centre (ESTEC)**, The Netherlands
- Master thesis project in collaboration with TU Dresden and Leiden University
- Funding: ERASMUS+ of the European Union
- 07/2016 – Student assistant
12/2016 **Stefan Diez Group** – Biophysics of Single Motor Proteins, B CUBE – Center of Molecular Bioengineering at TU Dresden, Germany
- 08/2015 – Internship
01/2016 Biology & Env. Monitoring Science Office, Science Department, Directorate Human Spaceflight & Operations, **European Space Agency (ESA)/ European Space Research and Technology Centre (ESTEC)**, The Netherlands
- Contributed to the Bio-X experiment | measurements of cell height changes under hypergravity and microgravity conditions
- Participated in the 63rd ESA parabolic flight campaign, granted by the European Low Gravity Research Association (ELGRA)
- 10/2011 – **B.Sc. in Physics**
09/2015 Technische Universität Dresden, Germany
Thesis: 'Indirect determination of Jupiter's position using gravitational light deflection as part of ESA's Gaia space mission'



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