Curriculum Vitae - Sára Lévay

Personal information

Place and date of birth:	Székesfehérvár (Hungary), 25/12/1993
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	Google Scholar / LinkedIn

Current position

2021-Actual	Post-Doc Research topic: Flow of granular materials: effect of particle shape *Wigner Research Centre for Physics, Budapest* *Partially Ordered Systems Research Group*

Education

2017-2021	PhD in Physics Date of defense: 08/10/2021, result: 100% Dissertation: Self-organizing processes in granular materials *Department of Theoretical Physics* *Budapest University of Technology and Economics (BME)*
2015 - 2017	MSc in Physics *Budapest University of Technology and Economics* Thesis: Modeling the shear and alignment of granular materials
2012 - 2015	BSc in Physics *Budapest University of Technology and Economics* Thesis: Modeling and simulation of granular materials
2019-Actual	MA in Theology *Saint Paul Academy* Extracurricular

Academic experience

Cooperations

- Cooperation and experimental work at the *Otto von Guericke University (Magdeburg, Germany)* in the group of Prof. Ralf Stannarius. During my visits we cooperated in experiments, which resulted joint publications.
  - In 2015 we studied experimentally the segregation of granular mixtures in a spherical tumbler, which resulted a Phys. Rev. E publication.
  - In 2016 we started to conduct experiments and simulations to understand the frustrated packing of spherical granular particles in a narrow container during shaking. This resulted a Soft Matter publication.
  - In 2018 we continued to study the frustrated packing of particles from the aspect of the Edwards theory by experiments and simulations. Our results are presented in Phys. Rev. E.
- Cooperation with the group of Prof. Dietrich Wolf at the *University of Duisburg-Essen (Duisburg, Germany)*. With a DAAD Research Grant I spent 10 months in Duisburg learning contact dynamics simulations and studying the quasistatic shear of granular materials.

Skills

- DEM simulation of granular materials with molecular dynamics (MD): LAMMPS, LIGGGHTS and contact dynamics (CD).
- Large-scale simulations, code development, data analysis (C++, Python).
- Mesoscopic simulations, Monte Carlo methods.
- Experiments with granular materials, image and data analysis.

Publications

- **S. Lévay**, D. Fischer, R. Stannarius, E. Somfai, T. Börzsönyi, L. Brendel, and J. Török
  Interacting jammed granular systems
  Phys. Rev. E, **103**, 042901, (2021).
- T. Pongó, V. Stiga, J. Török, **S. Lévay**, B. Szabó, R. Stannarius, R. Cruz Hidalgo, and T. Börzsönyi
  Flow in an hourglass: particle friction and stiffness matter
  New Journal of Physics, **23**, 023001, (2021).
- **S. Lévay**, D. Fischer, R. Stannarius, B. Szabó, T. Börzsönyi, and J. Török
  Frustrated packing in a granular system under geometrical confinement
  Soft Matter, **14**, 396-404, (2018).
- J. Török, **S. Lévay**, B. Szabó, E. Somfai, S. Wegner, R. Stannarius, and T. Börzsönyi
  Arching in three dimensional clogging
  EPJ Web Conf., **140**, 03076, (2017).
- **S. Lévay** and J. Török
  Multiple shear bands in granular materials
  EPJ Web Conf., **140**, 03084, (2017).
- T. Finger, F. v. Rüling, **S. Lévay**, B. Szabó, T. Börzsönyi, and R. Stannarius
  Segregation of granular mixtures in a spherical tumbler
  Phys. Rev. E, **93**, 032903, (2016).

Conferences

2021 Talk: Applying Edwards theory for a $2+\epsilon$ dimensional frustrated granular system
DPG Virtual Spring Meeting

2019 Talk: Studying the quasistatic shear of granular materials
Annual European Rheology Conference (AERC), Portoroz, Slovenia.

2018 Talk: Simulation and modeling of the frustrated packing in a granular system
DPG Spring Meeting, Berlin, Germany.

2017 Talk: Arching and clogging in three-dimensional silo
V. International Conference on Particle-Based Methods, Hannover, Germany.

2017 Poster: Multiple shear bands in granular materials
Powders & Grains, Montpellier, France.

2017 Poster: Arching in three-dimensional clogging
Powders & Grains, Montpellier, France.

2016 Talk: Dynamical mesoscopic model for granular shear
80th Annual Meeting of the DPG and Spring Meeting, Regensburg, Germany.

Teaching activity & Supervision

- Classical Mechanics for Physics Students
  Exercise class - 2017/18 fall, 2019/20 fall, 2020/21 fall
- Calculation Methods in Phyics for Physics Students
  Exercise class - 2017/18 spring, 2019/20 spring

- Introduction to Physics for Engineering Students
  Exercise class - 2016/17 fall, 2016/17 spring, 2017/18 fall
- Co-supervision of a student preparing a research paper to the Scientific Students' Associations Conference (BME).
  Contact dynamics simulations, title: Study of the stability of walls based on the force-indeterminacy.

Scholarships

2019/20	New National Excellence Program Scholarship (Hungary) Research topic: Alignment of granular material in a narrow container
2018/19	DAAD One-Year Research Grant for doctoral candidates (German Academic Exchange Service) Research topic: Studying the quasistatic shear of granular materials by means of contact dynamics simulations
2016/17	New National Excellence Program Scholarship (Hungary) Research topic: Studying the shear of granular materials by means of molecular dynamics simulations
2016/17	Scolarship of the Republic (Hungary)
2015/16	Scolarship of the Republic (Hungary)
2015/16	Scientific Scolarship of the Faculty (BME)
2014/15	Scientific Scolarship of the Faculty (BME)
2015	Pro Progressio Foundation BSc Thesis Scolarship

Awards

2015	Excellent Student of the Faculty Prize (BME)
2015	National Scientific Students' Associations Conference **First Prize**
2014	Scientific Students' Associations Conference **First Prize and Special Prize of the President**

Languages

Hungarian:	native language
English:	C1
German:	B2 (without exam)
Spanish:	B2
Ancient Greek:	beginner
Ancient Hebrew:	beginner

Extracurricular activities

Since 2016	Membership in Roland Eötvös Physical Society
2013 - 2020	Membership in Eugene Wigner College of Advanced Studies Vice presidency (2014-2015) and presidency (2015-2017)
2015 - 2019	Membership in Hungarian Astronautical Society