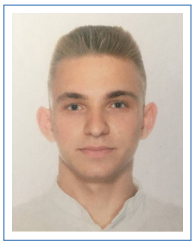
Maxim Shishkin

✱ 10 August 2000
+7 (999) 231 4496
mashishkin@edu.hse.ru
0000-0002-1243-5285
maxkway
maxkway



Education

2018–2022 **Bachelor of Physics**, *HSE University*, Moscow, *GPA - 9.6*

Bachelor thesis

title *Thermocapillary instability in ellipsoidal drops*

supervisors Associate Professor Cand. Sc. Elena Pikina

description Internal flow of a liquid in a small ellipsoidal drop placed in a vertical temperature gradient has been studied. Marangoni convection arises due to the variation in the coefficient of surface tension motion along the free surface of the drop. Scenarios were considered almost completely free surface (drop model on a thin ring) and with free only in the upper part (model formed in free suspended smectic film of drops of the isotropic phase).

results
- The complete system of functions is found that describes an arbitrary stationary axially symmetric Stokes flow in the coordinates of oblate and prolate spheroids.
- A picture of the stationary Marangoni flow was found in both cases - one vortex toric flow. It is shown that changing the conditions on the surface near the ends affects only the fluid flow in a small region.
- Within the framework of the linear theory of stability, critical values of the temperature gradient are found, at which the system loses stability with respect to the formation of a large number of vortices. Phase diagrams are constructed in the coordinates 'semiaxes ratio– critical Marangoni number'.
- The scheme with a drop on a ring was experimentally implemented, where tracers were used to indicate flow. Their periodic motion was observed, the period of which agrees well with the theoretical prediction.

Publications and conferences

- 2022 "Circulating Marangoni flows within droplets in smectic films" [1]
  DOI: 10.1103/PhysRevE.106.055105
- 28th International Liquid Crystal Conference 2022,Lisbon, Portugal — poster avalible on github `https://github.com/maxkway/sci/blob/main/PosterILLC2022.pdf`, article in progress.

Experience

2022–2023 **Research Engineer**, *Landau Institute for Theoretical Physics of the RAS*, Chernogolovka, Moscow region, Russia
Russian Science Foundation Grant No. 22-72-10052.

2022 **Teacher**, *HSE University*, Moscow, Russia
Seminars on computational physics

2021–2023 **Laboratory Assistant**, *Institute of Solid State Physics of the RAS*, Chernogolovka, Moscow region, Russia
Russian Science Foundation Grant No. 18-12-00108.

2021–2023 **Assistant Lecturer**, *HSE University*, Moscow, Russia
Probability theory and Complex analysis

Computer skills

■□□□□ basic knowledge
■■□□□ intermediate knowledge with some project experience
■■■□□ extensive project experience
■■■■□ deepened expert knowledge
■■■■■ expert / specialist

	Level	Skill	Years	Comment
Language:	■■■■□	Python	4	*The main tool*
	■■■■□	LaTeX	6	*Typesetting system for all*
	■■□□□	LabVIEW	2	*Automation of experiments*
	■■■□□	gnuplot	3	*Fast data analysis*
	■■□□□	Wolfram	2	*Symbolic calculations*
OS:	■■■□□	Linux	4	

Sport life

Volleyball Weekly practice from 12 years
Swimming Sports category in childhood
Skiing Forest walks up to 50 km

References

[1] E. S. Pikina, M. A. Shishkin, K. S. Kolegov, B. I. Ostrovskii, and S. A. Pikin. Circulating marangoni flows within droplets in smectic films. *Phys. Rev. E*, 106:055105, Nov 2022.