

# CURRICULUM VITAE

JAKUB CACH

## OFFICE ADDRESS AND PERSONAL DATA

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Mathematical Institute  
Faculty of Mathematics and Physics  
**Charles University**  
Sokolovská 83  
Praha 8 – Karlín  
185 75, Czech Republic

Email: cach@karlin.mff.cuni.cz  
Date of birth: 28th August 1999  
Place of birth: Chrudim, Czech Republic  
Nationality: Czech

## EDUCATION

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- 10/2023 – present PhD student of the study programme *Mathematical and computer modeling*  
Charles University in Prague, Faculty of Mathematics and Physics  
Topic of dissertation: *Effect of viscoelastic rheology on the flow behavior of polymeric and biological fluids*  
Advisors: RNDr. Karel Tůma, Ph.D.; prof. RNDr. Josef Málek, CSc., DSc.
- 2021 – 2023 Graduate degree with honours, study programme *Mathematical and Computational Modelling in Physics*  
Charles University in Prague, Faculty of Mathematics and Physics  
Thesis: *Viscoelastic rate-type fluids: a study of the effect of stress diffusion by means of numerical simulations*  
Supervisor: RNDr. Karel Tůma, Ph.D.
- 2018 – 2021 Undergraduate degree in the study programme *General Physics*  
Charles University in Prague, Faculty of Mathematics and Physics  
Thesis: *Numerical comparison of two mathematical formulations of viscoelastic Oldroyd-B model*  
Supervisor: RNDr. Karel Tůma, Ph.D.

## EXPERIENCE

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- 6/2022 – 9/2022 Junior CFD analyst at Ricardo Prague s.r.o.

## AWARDS

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- 5/2023 Winner of the 23rd SVOČ competition (student competition organized by Czech and Slovak mathematical societies)  
Work: *Numerical investigation of non-Newtonian phenomena in viscoelastic rate-type fluid models: Weissenberg effect*  
Category: *Applied mathematics – Mathematical modeling of dynamics*  
Liberec, Czech Republic

## SCIENTIFIC PROJECTS

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- 2023 – present Team member, Czech Science Foundation 23-05207S: *Development of reliable computational tools adequate for the study of fluid-structure interactions, with special relevance to cardiovascular problems*, principal investigator Josef Málek
- 2023 – present Team member, ERC-CZ LL2105, supported by the Ministry of Education, Youth and Sport of the Czech Republic: *The interaction of fluids and solids*, principal investigator Sebastian Schwarzacher

## RESPONSIBILITIES

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- 6/2023 – present President of Charles University SIAM Student Chapter

## **PROGRAMMING SKILLS**

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Python, FEniCS, Firedrake, NumPy, SciPy, MATLAB, Wolfram Mathematica

## **LANGUAGE KNOWLEDGE**

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Czech – native, English – B2

Prague, October 28, 2023