Boyuan Yu

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Education

PhD degree in Civil Engineering *McGill University*
PhD degree program *September 2020 - July 2024*
CGPA: 4.00/4.00.
Thesis title: TBD.

Master's degree in Civil Engineering *McGill University*
Master's degree program *September 2018 - May 2020*
CGPA: 3.96/4.00.
Thesis title: Transverse shear instability in steep open-channel flow, Link.

Bachelor's degree in Water Conservancy and Hydropower Engineering *Hohai University*
Bachelor's degree program *September 2014 - May 2018*
CGPA: 4.80/5.00.
Ranking: 1/155.

Citizenship Status

People's Republic of China

Peer-Reviewed Publications

1. **Boyuan Yu**, and Vincent H. Chu,
The front runner in roll waves produced by local disturbances,
J. Fluid Mech., 932, A42 (2022) [18 pages];
DOI: 10.1017/jfm.2021.1011.

2. **Boyuan Yu**, and Vincent H. Chu,
Impact force of roll waves against obstacles,
J. Fluid Mech., 969, A31 (2023) [25 pages];
DOI: 10.1017/jfm.2023.580.

3. **Boyuan Yu**, and Vincent H. Chu,
Roll Waves in Mudflow Modelled as Herschel-Bulkley Fluids,
Under review by J. Eng. Mech. (2024) [30 pages].

4. **Boyuan Yu**, and Vincent H. Chu,
Roll Waves on a Laminar Sheet Flow of Newtonian Fluid with Negligible Surface Tension,
Under review by J. Fluid Mech. (2024) [25 pages].

5. **Boyuan Yu**, and Vincent H. Chu,
Roll Waves on a Laminar Sheet Flow of Power-law Fluid with Negligible Surface Tension,
In preparation.

6. **Boyuan Yu**, and Vincent H. Chu,
Impact Force of Roll Waves on Mudflow Modelled as Power-law Fluids,
In preparation.

7. **Boyuan Yu**, and Vincent H. Chu,
   Wave and bed-friction effect on instability of shear flow in shallow waters,
   the 10th Conference on Fluvial Hydraulics - River Flow 2020: Delft, Netherlands [8 pages];
   DOI: 10.1201/b22619-12.

8. **Boyuan Yu**, and Vincent H. Chu,
   Impact force of the roll waves produced by local disturbances,
   the 39th IAHR World Congress (2022): Granada, Spain [10 pages];
   DOI: 10.3850/IAHR-39WC2521711920221273.

9. **Boyuan Yu**, and Vincent H. Chu,
   Roll Waves on a Laminar Sheet Flow produced by Local Disturbance,
   the 11th International Conference on Fluvial Hydraulics - River Flow 2022: Kingston and Ottawa, Canada [8 pages].

10. **Boyuan Yu**, and Vincent H. Chu,
    Impact of Mud Flow Instabilities on Hydraulic Structures,
    the 11th International Conference on Fluvial Hydraulics - River Flow 2022: Kingston and Ottawa, Canada [9 pages].

11. **Boyuan Yu**, and Vincent H. Chu,
    The Impact of Flood Waves on Hydraulic Structures,
    the 11th International Conference on Fluvial Hydraulics - River Flow 2022: Kingston and Ottawa, Canada [8 pages].

12. **Boyuan Yu**, and Vincent H. Chu,
    The Front Runner of Roll Wave in Mudflow,
    Accpted by Proceedings of the ASME 2024 43nd International Conference on Ocean, Offshore and Arctic Engineering OMAE2024: Singapore [10 pages].

13. **Boyuan Yu**, and Vincent H. Chu,
    Impact of Roll Waves in Mudflow on Hydraulic Structures,
    Accpted by Proceedings of the ASME 2024 43nd International Conference on Ocean, Offshore and Arctic Engineering OMAE2024: Singapore [10 pages].

14. **Boyuan Yu**, and Vincent H. Chu,
    The Front Runner of Roll Waves in Jiang-Jia Ravine,
    Accpted by the 10th International Symposium on Hydraulic Structures 2024: Zurich, Switzerland [9 pages].

15. **Boyuan Yu**, and Vincent H. Chu,
    Roll Waves on Landslide Mudflow against Structures of Various Shapes and Orientations,
    Accpted by the 10th International Symposium on Hydraulic Structures 2024: Zurich, Switzerland [10 pages].

Talks and Presentations

1. **Boyuan Yu**, and Vincent H. Chu,
   The video animation related to the conference paper *Impact of Mud Flow Instabilities on Hydraulic Structures*,
   River Flow 2022 Conference Best Video Contest, 2022.

Teaching and Mentoring

Teaching Assistant — *September 2019 - May 2024*
McGill University — *Montreal, Canada*

- CIVE 281: Analytical Mechanics.

- CIVE 327: Fluid Mechanics and Hydraulics.
- CIVE 572: Computational Hydraulics.

Research Interests

- Hydrodynamic instabilities.
- Shallow water equations.
- Hyperbolic conservation laws.
- Finite volume method.
- Riemann solvers.
- Roll waves and shear instabilities.
- Multiphase flow.
- Non-Newtonian fluids.
  - Visco-plastic fluids.
  - Visco-elastic fluids.
  - Granular flow.
- Wave impact forces on structures.
- Open-source CFD.
- Multilayer model.
- Spectral method.
- Stratified flow, internal waves.

Technical Skills

Programming Languages/Tools	Matlab, Mathematica, Python, C, Fortran, Julia
Numerical models for CFD	Basilisk, Gerris, OpenFOAM, Clawpack, Centpy, Wavemaker
Postprocessing tools for CFD	Tecplot, Paraview, OriginLab, Microsoft Visio, Gnuplot
Text processing	LaTeX, Microsoft Word, Markdown & Obsidian
Operating system	Windows, Linux
Video editing	Kdenlive