

# Numerical Hydraulics HS 2019

Monday 12:45-14:30, HIL E6

Markus Holzner

## Contents

23.09. Basics I (Equations)

30.09. Basics II (Turbulence, Reynolds averaging)

07.10. Time-varying pipe flow, Joukowski surge

14.10. Time-varying pipe flow, FD-method, method of characteristics

21.10. Open channel flow 1D, Approximations, steady state profiles

28.10. Open channel flow 1D, FD method

04.11. Exercise Session: Basement

11.11. Open channel flow 1D, Method of characteristics

18.11. Open channel flow, finite volumes

25.11. Tracer transport in 1D flow

02.12. Temperature model in 1D Flow

09.12. Exercise Session: Tracer and temperature transport

16.12. Hydro- and thermopeaking

The lecture notes of the course are on the webpage (in German and English)

<http://www.efm.ifu.ethz.ch/education/numerical-hydraulics.html>

The power point presentations will also be available on this website.

For questions contact:

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Exercises: There will be 5 homework assignments

- 1.) MATLAB program for pressure surge
- 2.) MATLAB program for flood routing (1D)
- 3.) Solving a flood routing problem (2D) using BASEMENT
- 4.) MATLAB program for tracer transport (1D)
- 5.) MATLAB program for equilibrium temperature and heat transport

The homework should be handed in **within 3 weeks** after the assignment is given in the lecture.