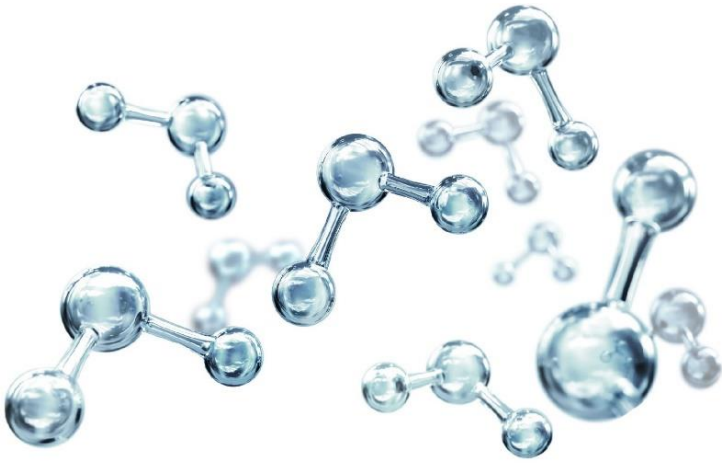
# Seminar

CMWS Centre for Molecular Water Science

04th of April 2024
12:00 h

Zoom Virtual Meeting:
https://tuhh.zoom.us/j/82631283465
Meeting-ID: 826 3128 3465
Password: 978444




## Dr. Nikita Kavokine

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## Quantum nanofluidics: from Coulomb drag to hydroelectric power


Liquids are usually described within classical physics, whereas solids require the tools of quantum mechanics [1]. We have shown that in nanoscale channels, this distinction no longer holds. At these scales, the liquid flows become intertwined with electron dynamics in the channel walls, resulting in a wealth of phenomena beyond the reach classical fluid mechanics. I will discuss, in particular, our recent results on the coupling of liquid flows with electric currents in the channel walls [2], and implications for hydroelectric energy conversion at the nanoscale.



[1] **N. Kavokine**, M.-L. Bocquet and L. Bocquet, Nature 602, 84–90 (2022).

[2] B. Coquinot, L. Bocquet and **N. Kavokine**, Phys. Rev. X 13, 011019 (2023).