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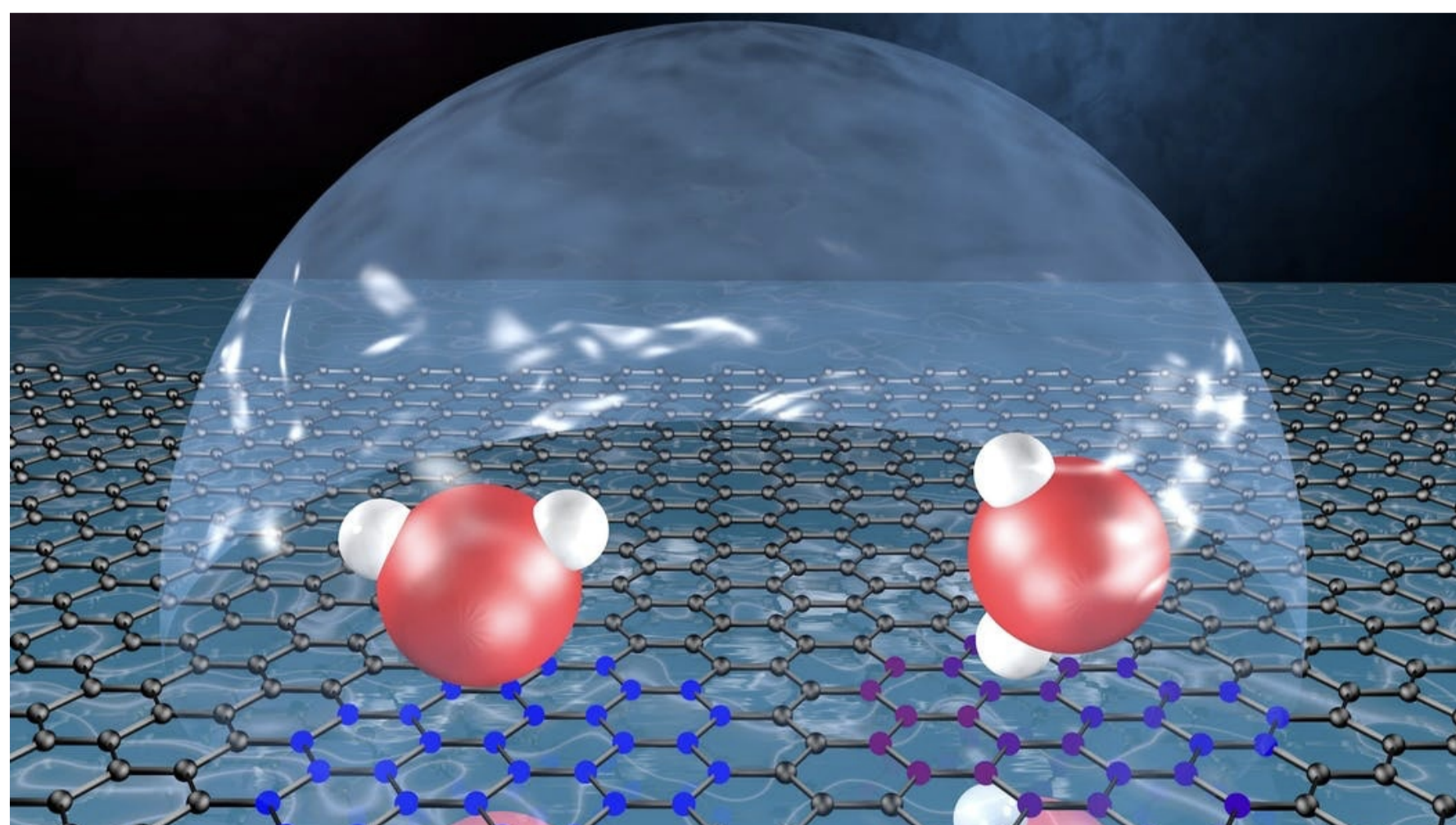
## Experimental investigation of quantum solid-liquid friction

# physikalisches

Mo. 24.6.24  
16:00 Uhr  
Ort: H34

Carbon nanomaterials exhibit peculiar properties in terms of water permeation, ultralow hydrodynamic friction and exalted ionic transport. These results challenged the classical description of water-carbon friction and they lead to a novel theoretical rationalization of fluid transport in nanochannels based on coupling between collective excitations of electrons in the solid and molecules in the liquid.

Although this new framework seems to reconcile the existing results for water transport at interfaces of graphene and carbon nanotubes, the demonstration of quantum liquid-solid friction is still missing. In this talk we revisit the current state of art of fluid transport at nanoscale and we will present recent experimental investigations of the complex coupling between fluid behavior and the electronic properties of confining materials.



Schematic representation of non-classical interactions between water molecules and atomically flat solid with tunable electronic properties