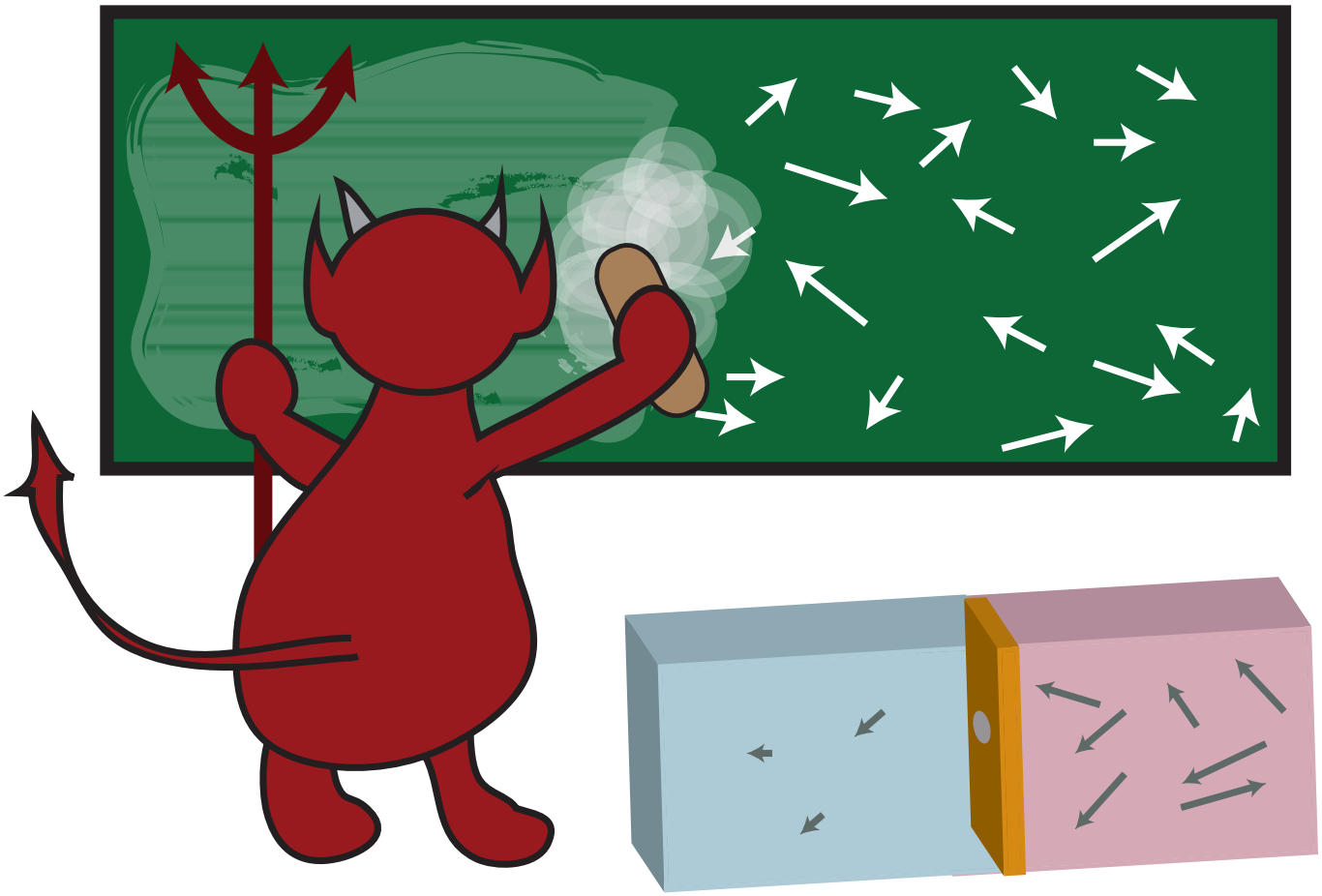
quantum information and foundations of thermodynamics

workshop

ETH Zurich

9th -12th August 2011

www.qit.ethz.ch/workshops/QIFTW11



quantum information and foundations of thermodynamics

The idea of studying thermodynamics from the viewpoint of information theory has always attracted considerable attention. An early example is the paradox of Maxwell's demon, which, as pointed out by Szilárd and Bennett, can be related to information principles:

> A demon operates the trapdoor between two boxes filled with a gas at the same temperature. He lets fast particles fly to the right box, cooling the left container and heating the right one. The apparent violation of the second law is clarified if we look at the demon's memory, where he stores the information about the particles. Eventually he will have to erase his memory, an irreversible operation that costs him work.

Now, a new generation of researchers is committed to use quantum information theory to explore the foundations of thermodynamics. Join us in a four-day workshop in Zurich to share knowledge and discuss future directions for the field.

We will cover topics like thermalization, heat engines, entropy measures in thermodynamics, the information-work relation, state preparation, and thermodynamics of small systems.

organization

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