Use of COMSOL for Physics Laboratory Exercises

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Abstract

COMSOL Multiphysics® is used to simulate thermal flow experiments at out University for Applied Physics. Students have to measure thermal flow problems and verify the measurements with detailed simulations. The desired accuracy is 5% or less. The presentation will cover 3 laboratory experiments: cooling of an Aluminum rod by natural convection, time dependent heat flow into a container with sand and the heat transfer in a parallel counter flow heat exchanger. In all these examples the capabilities of COMSOL will be discussed and compared with the experimental accuracy of the measurements.