# Modeling and simulation of parabolic trough power plant using various heat transfer fluids and nanofluids: Application to NOOR I plant in Ouarzazate, Morocco

*H. Bakhti* and I. Gasser, Universität Hamburg*

A mathematical model is built to describe the fluid dynamics for different heat transfer fluids in a parabolic trough power plant. Generally, the power plant consists of a network of tubes for the flow of a heat transport fluid. This paper focuses on the analysis of using nanofluids in such power plants, where a numerical approach is presented for single tube model and also for realistic network settings. In addition, the performance of the power plant is studied via analyzing the obtained power output and the energy efficiency of the different systems. The proposed mathematical model takes into account the real system parameter and external conditions from NOOR I power plant in Ouarzazate, Morocco. Effects of different system parameters on the output energy are conducted in order to obtain the best conditions of utilization in parabolic trough power plant.

**Lower Bounds for the Advection-Hyperdiffusion equation**