1086-74-1111 **Matthias Augustin*** (augustin@mathematik.uni-kl.de), P. O. Box 30 49, 67653 Kaiserslautern, Germany. *Stress field simulations in geothermal reservoirs.* Preliminary report.

With the rising demand for energy and the accompanying short running of resources, expanding the use of renewables is inevitable. A very promising source of energy is the heat stored in the earth's crust which is used by so-called geothermal facilities. Scientists from fields like geology, geo-engineering, geophysics and especially geomathematics are challenged to help making geothermics a reliable and safe energy production method. One of this challenges is modeling the mechanical stresses within a reservoir.

This talk will give an insight into stress field simulations. After introducing the basic equations and their relations to more familiar ones (heat equation, Stokes equations, Cauchy-Navier equation), we discuss the so-called method of fundamental solutions and how it can be used in our task. Based on the properties of the fundamental solutions, theoretical results will be established. The talk concludes with some numerical examples to inspire further investigations in the performance of the method and an outlook on further research goals. (Received September 19, 2012)