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Matthias Augustin* (augustin@mathematik.uni-kl.de), University of Kaiserslautern,
Department of Mathematics, P. O. Box 30 49, 67653 Kaiserslautern, Germany. *Methods of
Fundamental Solutions in Poroelasticity.*

Geothermal energy, one of the most promising renewables, has a high need for stress field modeling due to the necessity to increase productivity of geothermal reservoirs by hydraulic fracturing but also to prevent uncontrolled stress releases, i.e., earthquakes.

This talk introduces a new numerical method to model the stress field in a geothermal reservoir including poroelastic effects. This method, based on the method of fundamental solutions, is a mesh-free, integration-free boundary method. We present theoretical results on the density of suitable fundamental solutions systems, which are the basis for two different ansatzes, as well as numerical results in two dimensions to evaluate the performance of the method and compare our two ansatzes. The talk is completed by a short discussion of an example on a three-dimensional domain. (Received September 08, 2014)