1146-35-419   **A J Meir*** (`ajmeir@smu.edu`), Department of Mathematics, Clements Hall, Southern Methodist University, Dallas, TX 75275-0156. *On the equations of poroelasticity — recent advances.* Preliminary report.

Poroelasticity is a complex coupled multiphysics phenomenon. The equations of poroelasticity (a coupled system of pde) model and predict the mechanical behavior of fluid-infiltrated porous media. Their significance comes from the fact that many natural substances, e.g., rocks, soils, clays, shales, biological tissues, and bones, as well as man-made materials, e.g., foams, gels, concrete, water-solute drug carriers, and ceramics, are all elastic porous materials (hence poroelastic).

I will give an overview of the equations of poroelasticity and their mathematical analysis, suggest the use of finite element based numerical methods for efficiently and accurately approximating solutions of model problems in poroelasticity, and discuss some observations, recent research directions and advances, and possible extensions. (Received January 28, 2019)