1146-35-11 **Tetyana Malysheva*** (malyshet@uwgb.edu) and **Luther W. White**. *Global Well-Posedness Theory for a Class of Coupled Parabolic-Elliptic Systems.* Preliminary report.

We present the global existence, uniqueness, and continuous dependence theory for weak solutions to the class of coupled systems consisting of a parabolic equation, with boundary and initial conditions, and an abstract elliptic equation in a variational form, with time as a parameter. Such systems are motivated by the modeling of coupled diffusion and elastic deformation processes in inhomogeneous porous media within the quasi-static assumption. The main techniques for the theory development are the proposed pseudo-decoupling method that allows one to transform the coupled parabolic-elliptic system into an initial-boundary value problem for a single implicit equation and a refined approach to deriving energy estimates. In real-world applications, the parameters of the system may differ by more than twenty orders of magnitude. For this reason, the approach based on element-wise contributions to the energy norms and precise relationship between parameters of the coupled system is developed. (Received October 24, 2018)