Two Phase Flow in Porous Media with Dynamic Capillary Pressure[1] KIMBERLY SPAYD, MICHAEL SHEARER, North Carolina State University — The one dimensional Buckley-Leverett equation for two phase flow in porous media is modified by including a dependence of capillary pressure on the rate of change of saturation. This model, due to Gray and Hassanizadeh, results in a nonlinear partial differential equation that supports traveling waves corresponding to undercompressive shocks. These waves, which also appear in driven thin liquid films, have the property that small disturbances pass through them from front to back. We present analytic results that are confirmed by numerical simulations of initial value problems.

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