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**Capillary rise of a power law fluid into a deformable porous material**[1] JAVED SIDDIQUE, DANIEL ANDERSON, George Mason University — We examine a mathematical model for capillary rise of a power law fluid into a one dimensional deformable porous material. We use mixture theory to formulate the model. Of interest are the interface positions of the solid and the liquid as the material deforms. If the effects of gravity are absent, the model admits a similarity solution, which we compute numerically. If the effects of gravity are included, the free boundary problem is solved numerically. In this case, steady state solutions exist and are the same for both Newtonian and non-Newtonian cases. For comparison, we also examine capillary rise into a rigid porous material, where liquid imbibition occurs without material deformation. In this talk we compare the Newtonian and non-Newtonian results in the absence and the presence of gravity effects for both rigid and deformable porous material.

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