Dambaru Bhatta* (dambaru.bhatta@utrgv.edu) and Daniel N Riahi. Oscillatory solutions for a polluted convective flow in an aquifer layer. Preliminary report.

Here, we consider a horizontal aquifer layer with rigid boundaries in the presence of pollution concentration to investigate the oscillatory solutions in a hydrothermal convective flow. We treat such a layer as a porous medium where Darcy's law holds, subjected to the condition that the porous layer's hydraulic resistivity varies in the vertical direction. Applying the perturbation approach, we obtain the condition at which the oscillatory mode of flow is preferred over the steady case. The oscillatory solutions for convective flow quantities such as vertical velocity, pollution concentration, and temperature that arise as the Rayleigh number exceeds its critical value are computed and presented for different values of the parameters. (Received January 21, 2019)