Numerical simulation of conjugate heat transfer under the effects of thermal radiation, porous medium, and nanofluid

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Abstract. Conjugate heat transfer is a combination of energy transport within the fluid and heat conduction inside the solid blocks. Such problems plays significant role in various engineering applications including cooling of electronics, heat exchangers, thermal behavior within building elements and so on. During this third lecture some interesting problems on conjugate heat transfer in 2D and 3D regions under the effects of thermal radiation, porous medium and nanofluids will be considered and the obtained results will be discussed.

Keywords: Conjugate heat transfer, natural convection, non-primitive variables, finite difference method