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## Mixed convection from a vertical cylinder embedded in a porous medium: Non-Darcy model

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**Abstract:** The problem of Non-Darcian mixed convection about a vertical cylinder embedded in a porous medium is analyzed. Nonsimilarity solutions are obtained for the case of variable wall temperature (VWT) and variable surface heat flux (VHF). The entire mixed convection regime is covered by two different nonsimilarity parameters: one for VWT and the other for VHF, including the two limits of pure forced convection and pure free convection. A finite-difference scheme was used to solve the system of the transformed governing equations. The effect of four characteristic parameters namely the heating condition at the wall, the strength of mixed convection, the inertia and the boundary effect (the non-Darcian effect), and the cylinder curvature effect, on the heat transfer is investigated numerically. The results are found to be in excellent agreement with those of previous work.