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NOMENCLATURE

w' =velocity of fluid at time t' , p' =pressure, $p^* = p' - p_s$, ρ =density of fluid, T' =temperature of fluid, T_s =temperature of fluid at static case, C' =concentration of fluid, C_s =concentration of the fluid at static case, ν =kinematics viscosity, g =acceleration due to gravity, β =co-efficient of volume expansion for heat transfer, β^* =co-efficient of volume expansion for mass transfer, B_0 =strength of the magnetic field, σ =electrical conductivity of the fluid, c =radius of inner cylinder, d =radius of outer cylinder ($d > c$), C_p =specific heat at constant pressure, τ'_{rz} =viscous stress, D =molecular diffusivity, k_1 =chemical reaction parameter, and n_1, n_2, m_1, m_2 are non-zero constants, w is dimensionless velocity, r and z are dimensionless displacement variables, p =pressure, t =dimensionless time, λ =non zero constant, ψ =dimensionless temperature, ϕ =dimensionless concentration, a =dimensionless relaxation parameter, b =dimensionless retardation parameter, M =magnetic parameter, Gr =Grashoff number for heat transfer, Gm =Grashoff number for mass transfer, N =radiation parameter, Qr =heat source/sink parameter, Pr =Prandtl number, Sc =Schmidt number, h_c =chemical reaction parameter.