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Calculation of Free-Convective Heat Transfer on a Vertical Semiinfinite Plate

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Abstract

Self-similar problems of free-convective heat transfer on a vertical flat semiinfinite plate for high Prandtl numbers and three types of thermal boundary conditions (an adiabatic surface, a constant temperature, and a constant heat flux on the surface) are solved by the method of internal and external expansions on the basis of the equations of a laminar boundary layer in the Boussinesq approximation. Asymptotic relations are found for the main characteristics. The results obtained are compared with the data of other authors.

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