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FORM-DRAG EFFECTS IN THE CONVECTIVE INSTABILITY OF PARALLEL FLOW IN A HORIZONTAL POROUS LAYER WITH UNIFORM WALL HEATING

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ABSTRACT The instability of through flow in a horizontal porous channel with uniformly heated boundary walls is investigated. The analysis is based on the solution of the linearised perturbation equations expressing the local mass and energy balances, as well as the momentum balance modelled according to Darcy-Forchheimer's law. The neutral stability data are obtained in terms of the dimensionless governing parameters, namely the Darcy-Rayleigh number, the Péclet number, and the form-drag parameter.