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GENERALIZED BOUNDARY–LAYER FLOW DUE TO A SHRINKING PERMEABLE SHEET

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Abstract. This article analyzes a model proposed by Merkin and Pop [J. Eng. Math. **121** (2020)], of boundary-layer flow generated by a shrinking permeable sheet. The model is governed by two physical parameters, the transpiration rate, S, and the coupling between the fluid and the moving surface, c. We prove several results regarding the existence or nonexistence of solutions in the c-S parameter space. In regions where solutions are shown to exist, we prove that there is a continuum of infinitely many solutions. This is in contrast to previous numerical studies, which report either a unique solution or dual solutions.

Mathematics subject classification (2020): 34B15, 76D10.
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