Phragmén-Lindelöf alternative results in time-dependent double-diffusive Darcy plane flow

Yuanfei Li¹ and Xuejiao Chen¹

¹Guangzhou Huashang College

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Abstract

This paper investigates the spatial behavior of the solutions of the double-diffusive Darcy plane flow in a semi-infinite channel. Using the energy estimate method and the differential inequality technology, a differential inequality about the solutions is derived. By solving this differential inequality, it is proved that the solutions grow polynomially or decay exponentially with spatial variable. In the case of decay, we obtain the upper bound for the total energy. We also give some remarks to generalize the results of this paper.

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