Periodic steady-state solutions of a liquid film model via a classical method
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Abstract. In this paper, periodic steady-state of a liquid film flowing over a periodic uneven wall is investigated via a classical method. Specifically, we analyze a long-wave model that is valid at the near-critical Reynolds number. For the periodic wall surface, we construct an iteration scheme in terms of an integral form of the original steady-state problem. The uniform convergence of the scheme is proved so that we can derive the existence and the uniqueness, as well as the asymptotic formula, of the periodic solutions.