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Instability Of An Advective Flow In An Inclined Fluid Layer With Perfectly Heat-Conducting Boundaries[1] ALBERT SHARIFULIN, Associate prof of Perm National Polytechnic University, RAFIL SAGITOV, Assistant prof of Perm Pharmaceutical Academy — The interest to studying flows in infinite layers induced by the longitudinal temperature gradient is inspired by numerous geophysical and engineering applications (horizontal advective flows in the atmosphere and ocean, convection in vertical and inclined mines and oil wells, etc.). The first investigations of this kind has been done by Ostroumov [1]. He formulated the problem about plane parallel convectional flow in an inclined plane parallel layer with perfectly heat-conducting boundaries caused by the presence of a transverse temperature gradient and the longitudinal temperature gradient. Ostroumov obtained exact analytical solution for the case where the axis of inclination was horizontal and the longitudinal and transverse temperature gradients were perpendicular to this axis. Stability of various limiting cases of the problem (plane layer heated from below, vertical layer heated from the side with and without the longitudinal temperature gradient, and inclined layer between isothermal plates) were studied by many authors. The present paper describes the results of numerical studying of short-wave instability of a plane parallel convective flow in an inclined plane layer with perfectly heat-conducting boundaries under the action of the longitudinal temperature gradient (limited case of Ostroumov problem). [1] G.A. Ostroumov Svobodnaia konvektsiia v usloviakh vnutrennei zadachi. Gostekhizdat (1952). English translation: GA Ostroumov Free convection under conditions of the internal problem. NACA Tech. Memo. 1407(1958).

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