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**A class of boundary-layer problems for buoyancy-driven motions near a density maximum** HOWARD STONE, EMILIE DRESSAIRE, ERNST VAN NIEROP, DEAS, Harvard University — Engineering and design questions are becoming increasingly important for applications in the waters of the deep ocean where the temperature is close to the point of the maximum density of water. Here we treat a class of boundary-layer problems based on the nonlinear Boussinesq approximation appropriate for the conditions near a density maximum. Pioneering work in the area was performed by Goren (1966) and Gebhart and colleagues (in the 1970s-80s). We present results of the boundary-layer type for a wide range of physically relevant flow situations and contrast the results with known solutions based on the linearized Boussinesq approximation.

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