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On the Interior Boundary-Value Problem for the Stationary Povzner Equation with Hard and Soft Interactions

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Abstract. The Povzner equation is a version of the nonlinear Boltzmann equation, in which the collision operator is mollified in the space variable. The existence of stationary solutions in L^1 is established for a class of stationary boundary-value problems in bounded domains with smooth boundaries, without convexity assumptions. The results are obtained for a general type of collision kernels with angular cutoff. Boundary conditions of the diffuse reflection type, as well as the given incoming profile, are treated. The method is based on establishing the weak compactness of approximate solutions by using estimates of the entropy production.

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