

# *Uniqueness Theorems for the Tricomi Problem<sup>1</sup>. II*

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**1. Introduction.** In a previous paper [7] certain uniqueness theorems were proven for the Tricomi problem for equations of the form

$$K(y)u_{xx} + u_{yy} = 0.$$

The theorems were of two types: in one a certain condition on the behavior of  $K(y)$  was imposed while the domain under consideration was left unrestricted, while in the other a restriction is placed on the size of the domain and the behavior of  $K(y)$  (except for smoothness and monotonicity) is left free.

In this paper a stronger uniqueness theorem of the first type is established in that the condition imposed on  $K(y)$  is less severe. Such a theorem in itself is of limited interest as it seems likely that uniqueness holds for arbitrary monotone  $K(y)$  in a general domain. However, FRANKL [2] raised the question of the existence of transonic potential flows out of a jet. He showed that such problems, when considered in the hodograph plane, led to the Tricomi problem with  $K(y)$  a specific monotone function. In all previous uniqueness theorems the conditions necessary to establish a general uniqueness theorem were not present. In this paper a general uniqueness theorem is established for this problem. An associated existence theorem under somewhat stronger assumptions is also established.

In Section 2 the gas dynamical problems are stated. Section 3 establishes the necessary uniqueness theorem and Section 4 applies the results of the previous section to the gas dynamical case.

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