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Correction to my paper

A NEW SINGULARITY OF TRANSONIC PLANE FLOWS*

Quarterly of Applied Mathematics, XII, 343-349 (1955)

By A. R. MANWELL (*University College, Swansea*)

A much more detailed study of the singular solution discussed rather briefly in the note of the above title has shown that several statements in Sec. 4 are incorrect. Briefly, the expansions (4.4) and so also (4.5), (4.6) are valid only *locally* for either $\Theta = 0$ or for $\Theta = \pi$, but not necessarily for both. We may not infer from these expansions the existence of solutions in the whole interval $(0, \pi)$. (In particular, on account of the pole at $Z = 1$, we may not replace in (4.3) a contour for which $Z - 1 = 2i \exp(i\Theta) \sin \Theta$ is very small by the unit circle $Z = 1$).

A correct discussion shows that (4.3) and (4.4) yield only *two* independent solutions. As a consequence, the singular solution can be smoothly continued across the sonic line for $\Theta > 0$ but, unless we admit further singularities in the supersonic region, the flow would not join up smoothly for $\theta < 0$. Since we are seeking possible criteria for the breakdown of flow solutions, this correction leads to a slight strengthening of our original conclusion.

*Received March 7, 1955.

A MINIMUM PRINCIPLE OF PLASTICITY*

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This note is concerned with the removal of a certain restriction imposed by a proof[1] [Sec. 5] of a minimum principle of an isotropic, incompressible, strain-hardening material exhibiting a gradual transition from the elastic to the plastic state. The governing stress-strain relation for loading is given by

$$s_{ij}^* = 2G_0\epsilon_{ij}^* - p(E)\epsilon_{ij}E^*, \tag{1}$$

*Received Feb. 28, 1955.

[1]Section numbers enclosed in brackets refer to the following paper: D. Trifan, *A new theory of plastic flow*, Q. Appl. Math. **7**, pp. 201-211 (1949).