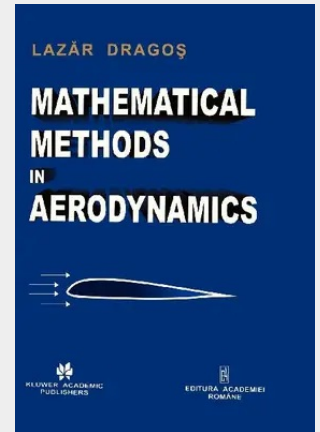


Mathematical Methods in Aerodynamics

The researchers in Aerodynamics know that there is not a unitary method of investigation in this field. The first mathematical model of the air plane wing, the model meaning the integral equation governing the phenomenon, was proposed by L. Prandtl in 1918. The integral equation deduced by Prandtl, on the basis of some assumptions which will be specified in the sequel, furnishes the circulation $C(y)$ (see Chapter 6). Using the circulation, one calculates the lift and moment coefficients, which are very important in Aerodynamics. The first hypothesis made by Prandtl consists in replacing the wing by a distribution of vortices on the plan-form D of the wing (i. e. the projection of the wing on the plane determined by the direction of the uniform stream at infinity and the direction of the span of the wing). Since such a distribution leads to a potential flow in the exterior of D and the experiences show that downstream the flow has not this character, Prandtl introduces as a supplementary hypothesis another vortices distribution on the trace of the domain D in the uniform stream. The first kind of vortices are called tied vortices and the second kind of vortices are called free vortices.

The researchers in Aerodynamics know that there is not a unitary method of investigation in this field. The first mathematical model of the air plane wing, the model meaning the integral equation governing the phenomenon, was proposed by L. Prandtl in 1918. The integral equation deduced by Prandtl, on the basis of some assumptions which will be specified in the sequel, furnishes the circulation $C(y)$ (see Chapter 6). Using the circulation, one calculates the lift and moment coefficients, which are very important in Aerodynamics. The first hypothesis made by Prandtl consists in replacing the wing by a distribution of vortices on the plan-form D of the wing (i. e. the projection of the wing on the plane determined by the direction of the uniform stream at infinity and the direction of the span of the wing). Since such a distribution leads to a potential flow in the exterior of D and the experiences show that downstream the flow has not this character, Prandtl introduces as a supplementary hypothesis another vortices distribution on the trace of the domain D in the uniform stream. The first kind of vortices are called tied vortices and the second kind of vortices are called free vortices.



213,99 €

199,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9789048164455

Medium: Buch

ISBN: 978-90-481-6445-5

Verlag: Springer

Erscheinungstermin: 01.12.2010

Sprache(n): Englisch

Auflage: 1. Auflage. Softcover version of original hardcover Auflage 2004

Produktform: Kartoniert

Gewicht: 1092 g

Seiten: 573

Format (B x H): 155 x 235 mm

