Information Order and Connectivity Samples

Seminar in Applied Physical Mathematics

1 Sample A [1, p. 2]

The sheet is coupled to the flow by the aerodynamic force K. We focus on the limit of high Reynolds number flow past slender bodies [1], for which $W << L$. For a wind of speed U in the $+x$ direction, we assume the components perpendicular and parallel to the sheet produce forces that independently contribute to the total force on the sheet. The component perpendicular to the sheet flows around the edges of the sheet, producing a drag per unit length,

$$F_D = \frac{1}{2} C_d \rho_a U^2 W \sin^2 \theta,$$

as though the sheet were locally a flat plate. Here, ρ_a is the density of air and C_d is a drag coefficient that must be determined experimentally. The flow component parallel to the sheet follows the sheet as it curves...

2 Sample B (Modified from [1, p. 2])

We estimate K, the total force on the sheet, by considering separately the components of the wind that are perpendicular and parallel to the sheet; we assume that these components produce forces that are independent. The flow component perpendicular to the sheet flows around the edges of the sheet, producing a drag per unit length as though the sheet were locally a flat plate. For a wind of speed U in the $+x$ direction, this drag per unit length is

$$F_D = \frac{1}{2} C_d \rho_a U^2 W \sin^2 \theta,$$

where ρ_a is the density of air and C_d is a drag coefficient that must be determined experimentally. The flow component parallel to the sheet follows the sheet as it curves...

3 Sample C (Modified from [1, p. 2])

To estimate K, the total aerodynamic force on the sheet, we assume high Reynolds number flow past slender bodies [1], for which $W << L$. We consider separately the components of the wind that are perpendicular and parallel to the sheet; we assume that these components produce forces that are independent. The flow component perpendicular to the sheet flows around the edges of the sheet, producing a drag per unit length as though the sheet were locally a flat plate. For a wind of speed U in the $+x$ direction, this drag per unit length is

$$F_D = \frac{1}{2} C_d \rho_a U^2 W \sin^2 \theta,$$

where ρ_a is the density of air and C_d is a drag coefficient that must be determined experimentally. The flow component parallel to the sheet follows the sheet as it curves...

References

[1] P. Buchak, C. Eloy, J. W. M. Bush and P. M. Reis, *The clapping book: wind-driven oscillations in a stack of thin elastic sheets.* (*unpublished*).