Review of WES-2019-93 V3

An impulse-based derivation of the Kutta-Joukowsky equation for wind turbine thrust

by

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General comments:

The manuscript (now in its 3rd version) has been reformulated and extended considerably.

I agree on publishing it if my recommendations from below are included.

Specific Remarks

Page 1, line 18:

You mentioned “all texts on wind turbine aerodynamics”. This is not completely true. To be update, please add:

S. Schmitz, Aerodynamics of Wind Turbines, Wiley (2018)

A.P. Schaffarczyk, Introduction to Wind Turbine Aerodynamics, 2nd Ed. SpringerNature (2020)

Page 8, lines 165 to 187.

Pseudo-equations using “≈” should not be present in a scientific paper. Again: Eq (24) is an integral over two functions - to draw any conclusion about the local behaviour demands mathematical assumption in which regularity class the functions $v^2(r)$ and $a^2(r)$ are embedded. Any decisive conclusion can only be drawn from the differential equation. See G. Gallavotti, Foundations of Fluid Dynamics, section 2.4.

In particular a possible (edge-)singularity at x = 1 may spoil the argument.

Page 2 Eqs. (1) to (2):

If I insert u_\theta = -2 w into Eq. (1) I feel that a factor of 2 is missing in the w^2 term of Eq. (2).

Please correct this typo, if it is one.

Page 12, line 261

I do not understand why \partial phi / \partial \theta equals x u_{\theta}. Please explain.