Author: "I acknowledge the mathematical distinction between the global tip-speed ratio λ and the local value λ_r. But this distinction the reviewer makes is flawed and departs from the underlying assumption of momentum theory, where λ is treated as uniform across the disk. Introducing λ_r as a spanwise parameter effectively muddles actuator-disk theory with blade-element concepts, which is inconsistent with the theory's own foundation."

In his original work [1], Glauert distinguishes between **axial momentum theory** (Chapter II of [1]) and **generalized momentum theory**. In the former, the rotor is modeled as a uniformly loaded, perforated disk, with purely axial flow (neglecting swirl). Even within the framework of axial momentum theory, Glauert introduces the concept of the annular element and the spanwise variation of induction. In the generalized momentum theory (Chapter III of [1]), wake rotation is taken into account. The analysis is again carried out using infinitesimal annular elements, but now introduces the concept of a radially varying circumferential induction coefficient. Several recent developments (see, for example, [2], [3]) build on Glauert's generalized theory and extend it to the case of wind turbine rotors — whereas Glauert's original formulation was developed and presented in [1] for aircraft propellers. The paper commented on by the author of the comment is likewise based on the theoretical developments found in these references.

Therefore, I maintain that the distinction made in my comment is valid and not flawed.

[1] Glauert, H.: Airplane Propellers, in: Aerodynamic Theory, edited by Durand, W., Springer, Berlin, Heidelberg, Farnborough, England, 169–360, https://doi.org/10.1007/978-3-642-91487-4_3, 1935.

[2] Tony Burton, Nick Jenkins, Ervin Bossanyi, David Sharpe and Michael Graham, *Wind Energy Handbook*, Third Edition, John Wiley & Sons Ltd. Published, 2021.

[3] Sørensen, J. N.: General Momentum Theory for Horizontal Axis Wind Turbines, Springer International Publishing, Switzerland, https://doi.org/10.1007/978-3-319-22114-4, 2016.

Author: "This reframing does not resolve the issue. Momentum theory is based on the actuator disk model, which is equivalent to an infinite-bladed, inviscid, tip-loss-free rotor with uniform loading. Within this framework, there cannot be a "family" of rotors; there is only a single idealized construct. The reviewer's notion that somehow there are multiple optimal rotors is therefore a contradiction not afforded by the theory itself."

Again, this statement seems to contradict the existing literature on the subject. In Section IV of [1], Glauert discusses rotor efficiency and develops families of optimum rotors within the framework of his generalized actuator disk theory. Similarly, Burton et al. [2] and Sørensen [3] extend Glauert's work to wind turbine rotors and derive optimal rotor families.

For example, Burton et al. [2] present the theory of optimal design in Section 3.8 and, in Figure 3.26 (p. 76), illustrate how the maximum Cp of a family of optimal rotors varies as a function

of the design tip-speed ratio (TSR). Comparable studies can also be found in Glauert's original work [1] for aircraft propellers (see, for instance, Figure 18, p. 206) and in Sørensen [3] for wind turbine rotors (see Section 5).

Author: "At the same time, it is evident from the tone of this review, as well as the two others, that the editors have gone to extraordinary lengths to solicit critiques of my Comment, searching for any conceivable flaw."

I would like to emphasize that I did not make any effort to find flaws in the author's comment. I believe that my assessment was based solely on scientific evidence, and I fully uphold the presumption of impartiality that characterizes reviewers of scientific publications. I consider the comment to be objective in several of its points of critique (as I have already acknowledged), and my sole aim is to help ensure that it is published free from scientific inaccuracies or potential subjective judgments. Ultimately, I believe that the publication of the comment will be beneficial in every respect — both for the community and for the journal — and this is why my only objective is to ensure that it is scientifically sound and accurate.

I sincerely hope that the references I have cited will assist the author in revising his comment.