The reviewer strongly believes that the paper presents insights into synchronized Helix wake mixing control. The results appear original and well written.

Page 1, Lines 15–20 (Introduction): When citing Manwell et al. (2010) and Barthelmie et al. (2009), clarify whether the 20% drop applies to onshore or offshore farms—or both—as atmospheric stability differs markedly between environments.

Page 2, Lines 30–35 (Introduction): The comparison between DIC and Helix (lower tower loads vs. higher gains) lacks quantitative value.

Page 2, Lines 46: The phrase “deeper arrays” is used without definition. Indicate the number of turbine rows or array dimensions to which “deeper” refers (e.g., > 5 rows).

Page 4, Figure 1 Caption: The caption omits key LES conditions (Reynolds number, TSR, inflow laminar vs. turbulent). Please add “TSR, Re number” to the caption for reproducibility.

Page 6, Lines 124: You state that $\omega_r \pm \omega_e$ yields the effective rotating-frame frequency. A brief note on potential aliasing when ω_e approaches ω_r (say when $\omega_e \approx 0.9\,\omega_r$) would alert practitioners to choose safe Strouhal ranges as explained in Equation 2.

Page 7, Equation (11): Please confirm if random wall model for uuK as described is applicable for oscillatory models.

Page 14, Algorithm 1, Step 1: which states that “Identify the frequency band of interest”. It will be helpful to state or refresh the reader, or which criteria are being considered.

Page 14, Lines 305: In Equation (22), amplitude A is reused from upstream, but pitch rate constraints can vary downstream. Please comment on how actuator saturation is handled.

Section 4.4 – Figure 13, The Gaussian Process fit effectively interpolates power gains, but the manuscript does not specify the kernel choice, hyperparameter tuning method, or the confidence-interval level (e.g., 95%). Including these details (perhaps in a brief footnote) would allow other researchers to reproduce the interpolation for better judgment.

General comments

Authors should consider scaling down the scope of the manuscript or splitting into two papers, as it becomes hard to follow at some point. The manuscript tackles estimation theory, control design, high-fidelity LES validation, fatigue assessment, and flow-recovery analysis all in one paper, which makes it difficult to follow the core contributions.