Comment on wes-2021-96
Anonymous Referee #1

Referee comment on "A computationally efficient engineering aerodynamic model for swept wind turbine blades" by Ang Li et al., Wind Energ. Sci. Discuss., https://doi.org/10.5194/wes-2021-96-RC1, 2021

The authors developed a new strategy for the simulation of Horizontal-Axis Wind Turbines (HAWTs) with swept blades, with the aim of reducing the computational cost associated to higher-order approaches such as Lifting Line Theory (LLT). The proposed method combines a near-wake model, based on the use of analytical solutions and approximations, with a far-wake one exploiting the Blade Element Momentum (BEM). An extensive testing was performed on a selected large size turbine for different blade degree of sweeping and the obtained predictions were compared with those of the BEM and two high-order methods, i.e. LLT and blade-resolved CFD, in terms of blade spanwise load distributions. A promising accuracy improvement is observed with the new method compared to traditional BEM.

The reviewer believes that the topic and the activity is very interesting, innovative and worthy of investigation. The adopted methodology is rigorous and clearly detailed throughout the whole paper, which is very well presented. Some specific considerations:

- The authors claim that the developed method is computationally more efficient than the Lifting Line one, which is taken as a reference in the present work. It would be helpful for the reader to support this statement with some numerical data, for instance the computation time required by each method for the performed simulations.

Based on the aforementioned comments, the publication of the paper in the present form is strongly recommended.