Effects of gain-scheduling methods in a classical wind turbine controller on wind turbine aeroservoelastic modes and loads - DTU Orbit (03/11/2019)

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The effects of different gain-scheduling methods for a classical wind turbine controller, operating in full load region, on the wind turbine aeroservoelastic modes and loads are investigated in this work. The different techniques are derived looking at the physical problem to take into account the changes in the aerodynamic characteristics as a function of the wind speed. The modal analysis is performed with a high-order linear aeroservoelastic model computed with the frequency based stability tool HAWCStab2. The time series of the wind turbines loads are computed with the non-linear time domain tool HAWC2. Results show changes in the natural frequency and in the damping ratio of the speed regulator mode and of the tower longitudinal mode when using the different gain-scheduling schemes.

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