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Variable Rotational Speed Control for Fixed-pitch Type Wind Turbines Using LPV Techniques

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Summary: In the paper, we consider the problem of variable rotational speed control for a wind turbine with the pitch fixed from the view point of scheduling by wind speed. For this problem, we apply LPV (Linear Parameter Varying) technique taking the varying parameter as wind speed. Our control purposes are to extract the maximum power from wind energy in the region below the rated wind speed and then to keep the rated power in the region above the rated wind speed. The effectiveness of applying LPV technique is shown through numerical simulations, compared with the results by the conventional control which is proportional to the rotational speed squared.

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