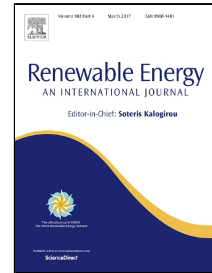


# Accepted Manuscript

Adaptive Pitch Control of Wind Turbine for Load Mitigation under Structural Uncertainties

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### Highlights

- A new adaptive control is formulated for the pitch control of wind turbine that may suffer from reduced life owing to extreme loads and fatigue.
- The adaptive controller makes a trade-off between the maximum energy captured and the load induced.
- The adaptive controller is designed to both regulate generator speed and mitigate component loads under turbulent wind field when blade stiffness uncertainties exist.
- Case studies show that the blade root flapwise load can indeed be reduced at a slight expense of optimal power output, which yields a new control design strategy.

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