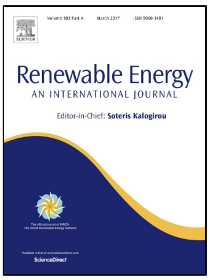
Accepted Manuscript



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

Yuan Yuan, J. Tang

PII:	S0960-1481(16)31127-2
DOI:	10.1016/j.renene.2016.12.068
Reference:	RENE 8405
To appear in:	*Renewable Energy*
Received Date:	17 June 2016
Revised Date:	14 November 2016
Accepted Date:	26 December 2016

Please cite this article as: Yuan Yuan, J. Tang, Adaptive Pitch Control of Wind Turbine for Load Mitigation under Structural Uncertainties, *Renewable Energy* (2016), doi: 10.1016/j.renene.2016.12.068

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.