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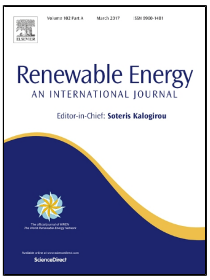

Low-frequency oscillations of wind power systems caused by doubly-fed induction generators

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Highlights:

(i) Linearized state equations of the DFIGs with the stator voltage transient are newly proposed.
(ii) The participation ratios are newly defined by the mechanical parameters of DFIGs to find the low-frequency oscillation caused by the DFIGs.
(iii) The multi-step derivatives are proposed to derive the sensitivity of the oscillation caused by the DFIGs to the parameters of the DFIGs and the SGs.
(iv) The sensitivity-based damping scheme to the low-frequency oscillation caused by the DFIGs is proposed and validated by changing the controllers' parameters.