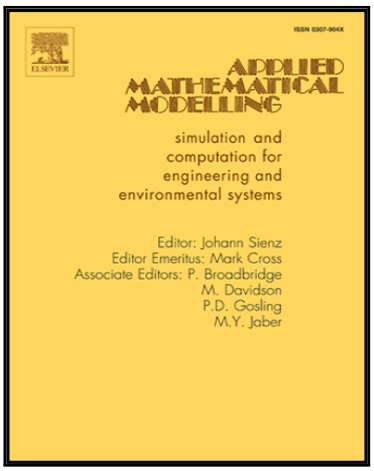

A new direct second-order reliability analysis method

Xianzhen Huang , Yuxiong Li , Yimin Zhang , Xufang Zhang

PII: S0307-904X(17)30643-1
DOI: 10.1016/j.apm.2017.10.026
Reference: APM 12027

To appear in: *Applied Mathematical Modelling*

Received date: 17 January 2017
Revised date: 5 October 2017
Accepted date: 19 October 2017

Please cite this article as: Xianzhen Huang , Yuxiong Li , Yimin Zhang , Xufang Zhang , A new direct second-order reliability analysis method, *Applied Mathematical Modelling* (2017), doi: 10.1016/j.apm.2017.10.026

Highlights

- A new study of the second-order reliability method (SORM) is presented.
- All the information from the fitted quadratic polynomial model of the limit state function is used.
- The cumulant generating function of the fitted quadratic polynomial surface in normalized standard variables is derived analytically.
- The saddlepoint approximation is utilized for reliability analysis.
- The proposed method is more accurate than the conventional SORM.