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A new direct second-order reliability analysis method

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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.

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