



Reliability analysis and inspection updating by stochastic response surface of fatigue cracks in mixed mode

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Résumé en anglais	<p>The analysis of engineering structures under fatigue crack growth aims at ensuring an appropriate reliability level over the entire operational lifetime. This paper deals with a new approach, namely the Stochastic Response Surface, to couple finite element analysis and reliability methods. The stochastic collocation method provides an explicit expression of the limit state function related to fatigue failure. This expression is used in first and second order reliability methods in order to compute the failure probability at a given structural age. When inspection is carried out, the structural reliability can be easily updated in terms of the observed crack length. Two numerical applications dealing with fatigue crack growth are presented to illustrate the proposed method, showing its performance in terms of numerical efficiency and accuracy.</p>
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Liens

[1] <http://okina.univ-angers.fr/h.riahi/publications>

- [2] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=27343>
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