Review Form 3

Book Name:	Science and Technology: Developments and Applications
Manuscript Number:	**Ms_BPR_ 4011**
Title of the Manuscript:	**Reliability Evaluation of Structures Excited by Earthquakes in Time Domain using a Novel Concept**
Type of the Article	**Book chapter**

PART 1: Comments

	Reviewer's comment	Author's Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	This manuscript presents a novel reliability evaluation method called REDSET for structures subjected to seismic loading in the time domain. It addresses the challenge of incorporating nonlinearities and uncertainties inherent in earthquake-excited structures. The method's efficiency and accuracy are demonstrated through numerical examples, including a comparison with Monte Carlo Simulation. The manuscript also discusses the method's potential in implementing Performance-Based Seismic Design (PBSD) guidelines.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	The title "Reliability Evaluation of Structures Excited by Earthquakes in Time Domain using a Novel Concept" is informative but could be made more concise and impactful. Here are a few alternative titles: REDSET: A Novel Method for Seismic Reliability Evaluation in the Time Domain Efficient Seismic Reliability Analysis using REDSET: A Time Domain Approach Beyond Random Vibration: REDSET for Performance-Based Seismic Design A Novel Time Domain Approach for Seismic Reliability Evaluation of Structure	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract is comprehensive and effectively summarizes the key aspects of the study. However, I have a few suggestions for improvement: Additions: Briefly mention the specific types of structures analyzed (e.g., steel frames). Highlight the use of real and artificially generated earthquake time histories. Explicitly state the main finding regarding the superiority of post-Northridge PR connections. Example of a revised abstract: A novel reliability evaluation method for steel structures excited by seismic loading applied in the time domain is presented. Major sources of nonlinearity and uncertainty, including the rigidities of beam- to-column connections, are incorporated in the algorithm. The stress-based finite element method is used for structural analysis, and seismic loading is applied using real and artificially generated earthquake time histories. Reliability is estimated for overall lateral deflection and inter-story drift limit states. The accuracy of the method is verified using Monte Carlo Simulation. With the help of examples, it is demonstrated that the proposed reliability concept is efficient and accurate, and that post-Northridge PR beam-to-column connections are superior to pre-Northridge FR connections. The procedure can extract the reliability information with the help of a few hundred deterministic analyses instead of millions using the Monte Carlo Simulation technique. A brief discussion is made about how the method can be used to implement the Performance Based Seismic Design (PBSD) guidelines. Rationale for changes: Specifying the type of structures and the use of real and artificial time histories provides more context for the reader. Highlighting the key finding about PR connections attracts attention to a significant practical implication of the study. The revised abstract maintains conciseness while providing a more complete picture of the research.	
Is the manuscript scientifically, correct? Please write here.	The manuscript appears to be scientifically sound, as it presents a novel method for seismic reliability evaluation called REDSET. The authors have validated the REDSET method using numerical examples and compared it with Monte Carlo Simulation, demonstrating its efficiency and accuracy. They have also explored its potential application in Performance-Based Seismic Design (PBSD). However, I need more information to provide a definitive answer to your question.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **-**	Analysis complete The references in this manuscript are a mix of recent and older citations, which is typical for research papers that build upon foundational knowledge. However, there are a few potential issues:	

Over-reliance on Author's Own Work: There are numerous references to the authors' own publications, especially the book "Reliability Assessment for Complex Dynamic Systems Excited in Time Domain - REDSET". While this is understandable given the focus on their novel method, it might be beneficial to cite other similar or contrasting approaches to provide a broader context.

Limited Recent References: Most of the references are from the 2000s or earlier. While the foundational concepts may still be relevant, it would strengthen the paper to include more recent work in the field of seismic reliability analysis and performance-based design. This would demonstrate awareness of current trends and further validate the proposed method's position within the existing body of knowledge.

Missing Key References: There are a few potentially relevant areas where additional references could be helpful:

Time-domain reliability analysis: Cite recent papers specifically addressing time-domain reliability assessment of structures under seismic loading.
Advanced ground motion modeling: Include references on the latest techniques for ground motion simulation and uncertainty quantification.
Performance-based design: Cite recent publications on the implementation and challenges of PBSD, particularly in relation to reliability assessment.
Here are a few specific suggestions for additional references:

Recent review papers on seismic reliability analysis: These could provide an overview of current methods and challenges, allowing the authors to better position their novel approach.
Studies comparing different reliability methods for seismic applications: This would help demonstrate the advantages and limitations of REDSET compared to other techniques. Publications on recent advancements in ground motion modeling and selection: This would ensure the paper reflects the latest practices in seismic hazard analysis.
Examples of PBSD implementation in real-world projects: This would add practical relevance to the discussion on the application of REDSET in PBSD.
By incorporating these suggestions, the authors can further strengthen the manuscript and demonstrate a more comprehensive understanding of the current state of the art in seismic reliability analysis and performance-based design.

| Is the language/English quality of the article suitable for scholarly communications? | The language and English quality in the manuscript are generally suitable for scholarly communication, but there is room for improvement. Here's a breakdown:

Strengths:

Clarity of technical terms: The authors effectively use technical terminology related to structural engineering and reliability analysis.
Logical flow of ideas: The manuscript presents concepts in a logical sequence, facilitating understanding. Conciseness: The writing style is generally concise, avoiding unnecessary wordiness.
Areas for improvement:

Sentence structure: Some sentences are overly long and complex, which can hinder readability. Breaking them down into shorter, simpler sentences would improve clarity.
Grammar and punctuation: There are occasional minor grammatical errors and inconsistencies in punctuation. A thorough proofreading is recommended to address these issues.
Word choice: In a few instances, the word choice could be more precise or formal to better suit a scholarly audience.
Overall assessment:

The language and English quality are sufficient for conveying the technical content of the manuscript. However, a careful revision focusing on sentence structure, grammar, punctuation, and word choice would enhance clarity and polish, making it even more suitable for scholarly communication. | |
| **Optional/General** comments | **Overall, this manuscript presents a novel and potentially impactful method for seismic reliability analysis. While there are areas for improvement, I believe the authors have made a valuable contribution to the field. Based on the provided guidelines, I would recommend this manuscript for Major Revision.**

Here's a breakdown:

Novelty and Significance: The introduction of REDSET is significant, offering an alternative to traditional methods with improved efficiency.

Technical Soundness: The methodology appears sound, but clarity could be enhanced with more explicit explanations and potentially additional analyses.

Clarity and Presentation: While generally understandable, the manuscript would benefit from improvements in sentence structure, language use, and figure quality.

Literature Review: The literature review could be more comprehensive, including recent advancements and alternative approaches.

With revisions addressing the points mentioned in this review, the manuscript has the potential to make a strong contribution to the field and warrant acceptance in a high-quality journal. | |

PART_2:

	Reviewer's comment	Author's comment *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

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