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| Book Name: | [Engineering Research: Perspectives on Recent Advances](https://www.bookpi.org/bookstore/product/engineering-research-perspectives-on-recent-advances-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_4534** |
| Title of the Manuscript:  | **Algorithm for Pillar Stability Assessment Based on the Interaction Principle** |
| Type of the Article | **BOOK CHAPTER** |

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| PART 1: Comments |
|  | Reviewer’s comment**Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | 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 significant contribution to the field of mining engineering, particularly in the context of pillar stability assessment in salt mines using the room-and-pillar method. By introducing a novel methodology based on the interaction principle between pillars, rooms, and the surrounding salt mass, the paper offers a more accurate and efficient approach to evaluating the secondary stress-deformation state of pillars, especially at greater depths. The proposed method addresses the limitations of traditional limit equilibrium theory, providing a framework that considers the rheological behavior of salt, time-dependent deformations, and advancements in extraction technology. This research is highly relevant for the scientific community as it not only enhances the safety and stability of mining operations but also opens avenues for deeper exploitation of salt deposits, which is crucial for industries relying on salt for storage and resource extraction. The findings and methodology can be extended to other mining contexts, making it a valuable resource for both researchers and practitioners in the field. |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | Ok, the suggested title is suitable for the topic. |  |
| 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 study presents an algorithm for assessing pillar stability in room-and-pillar mining using the interaction principle. The methodology integrates analytical and numerical approaches to evaluate secondary stress-deformation states, considering salt rheology and pillar geometry. The algorithm allows optimizing pillar dimensions for deeper mining while ensuring structural stability. Findings indicate that traditional limit equilibrium methods may overestimate pillar size, reducing extraction efficiency. The proposed model enhances safety and resource recovery in salt mining. This approach can be extended to other underground mining contexts, offering a more accurate assessment of long-term pillar behavior under varying geological conditions. |  |
| **Is the manuscript scientifically, correct? Please write here.**  | The manuscript appears to be scientifically correct, as it presents a well-structured methodology for pillar stability assessment in room-and-pillar mining. It follows a logical progression, incorporating theoretical principles, analytical models, and numerical methods. The study appropriately considers the interaction between stress, deformation, and rheological properties of salt, aligning with established geomechanical principles. The use of equations and experimental data supports the validity of the findings. However, a detailed review of calculations, assumptions, and references to prior research would be necessary to confirm complete accuracy. Minor refinements in clarity and explanation of key parameters may further enhance the manuscript. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | The manuscript includes a sufficient number of references, covering both classical and recent studies (2020-2023). However, adding more recent publications (2023-2024) on computational methods, numerical modeling, or machine learning in pillar stability assessment could enhance the study. References to real-world case studies from different mining regions would provide broader validation. Additionally, citing recent advancements in finite element analysis (FEA) for geomechanical modeling could strengthen the methodology. Ensuring a balance between foundational theories and modern techniques will improve the manuscript’s scientific relevance and impact. Further literature from leading mining and rock mechanics journals is recommended. |  |
| Is the language/English quality of the article suitable for scholarly communications? | The language quality of the article is generally suitable for scholarly communication, as it follows an academic tone and uses appropriate technical terminology. However, there are areas where clarity, sentence structure, and conciseness could be improved.**Suggestions for Improvement:**1. **Grammar & Syntax:** Some sentences are complex and could be restructured for better readability.
2. **Conciseness:** Certain sections, especially in the introduction and methodology, could be more direct to enhance clarity.
3. **Technical Terminology:** While the terminology is appropriate, ensuring consistency and avoiding redundancy will improve readability.

A thorough proofreading and minor revisions will enhance clarity and fluency. |  |
| Optional/General comments |  |  |

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| **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)* |  |

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| **Reviewer Details:** |
| Name: | **Lalit Kumar** |
| Department, University & Country | **Maharishi Markandeshwar Deemed to be University, India** |