

Review of: "Representations of Lie Groupoids on Bundles"

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Lie group theory is an important branch of mathematics that is very closely related to topology and algebra and is also widely used in physics, computer machine learning, and other fields owing to its unique properties and structure.

In this paper, the author states some basic concepts in Lie group theory, such as Lie groupoids, VB-groupoids, and the representation of Lie groupoids, and wants to prove "The representation of Lie groupoids on vector bundles provides VB-groupoids." This research piece is interesting, but it is not convincing only through the list of definitions. I think more explicit proof ideas should be added. In addition, some details of the paper need to be considered carefully:

1. Example 2 is repeatedly duplicated in Example 4.
2. The statement of Definition 12 needs further thought.
3. I have doubts about the passage above Definition 11, since from Proposition 3.5 in A. Gracia-Saz and R. Mehta's paper "VB groupoids and representation theory of Lie groupoids <https://doi.org/10.48550/arXiv.1007.3658>", the commutative diagram of Lie groupoids and vector bundles attaches additional conditions in order to give " $\Gamma \rightarrow G$ is a Lie groupoid object in the category of vector bundles or $\Gamma \Rightarrow E$ is a vector bundle object in the category of Lie groupoids."

Above all, I would suggest that the paper needs a major revision in order to be officially published.