

Author's response to the referee reports for
New stabilization criteria for time-delayed bimodal piecewise linear systems
(QNUJS-B2421)

Dear Reviewer,

We would like to thank you for the time and efforts dedicated to our manuscript as well as for your useful and constructive comments that were helpful in improving the quality of the paper.

We have carefully examined reviewers' comments and suggestions and revised the manuscript accordingly. A detailed reply to all comments can be found below this letter. For convenience, we copied the comments in *italic* font and provided our replies in **sans-serif** font. The changes with respect to the previous version of the paper are marked with **blue color** in the attached file.

We hope that the revised version satisfies all of you.

Best regards,

The Authors.

To Reviewer 1 (File name: Report_on_QNUJS-B2421)

The authors examine the stability and stabilization of time-delayed bimodal piecewise linear systems using smooth Lyapunov-Krasovskii functionals. The primary contributions are: (1) a novel stability criterion based on the proposed smooth Lyapunov-Krasovskii functional is introduced to ensure asymptotic stability in the case of zero inputs, and (2) a new condition is presented for designing linear state feedback controllers to stabilize the system. Lastly, several numerical examples demonstrate the effectiveness of the proposed methods.

We would like to thank the reviewer for pointing out our contributions. Our effort goes in the direction of exploiting the dynamical structure to come up with a new approach in solving the stability and stabilization of bimodal piecewise linear systems with time-delays.

All the proofs seem to be correct. The presentation is clear. A carefully revised version of this paper can be recommended for publication in Quy Nhon University Journal of Science with only minor checks required.

We would like to thank the reviewer for your positive comments and correction detail. Point-by-point replies can be found in this letter. By following reviewer's constructive comments, we have fixed the indicated typos and revised the paper as in the revised version. The changes with respect to the previous version of the paper are marked in **blue color**.

Detailed comments and suggestions:

Page 1, line 5: "two folds" → "twofold".

Page 1, line 8: "than before in the literature" → "than those previously reported in the literature".

Page 1, paragraph 2, line -5: "is also using" → "also uses". Page 1, paragraph 2, line -1: "i.e Carathodory solutions" → "i.e., Carathodory solutions".

Page 2, paragraph 1, line 10: "there is a few papers" → "there are only a few papers".

• *Page 2, paragraph 1, line 25: "The symbol R is " → "Denote by R".*

• *Page 2, paragraph 2, line 16: "are followed from" → "follow from".*

• *Page 2, paragraph 2, line 26: "i.e." → "i.e.,".*

We agree with the reviewer and we have fixed all.

• *Page 3, paragraph 2: Give a proof for Lemma 1.*

We have added the proof of Lemma 1 and moved the lemma to a new section named Notations and Preliminaries, as Reviewer 2 suggested.

Page 7, paragraph 2: Fig. 3 seems to be taken from another work. It should be redone if the figure does not originally belong to the authors.

The reviewer is right. Fig. 3 was taken from the paper (13), Example 21, in the reference list. In the manuscript, I clearly mentioned and cited the paper. However, due to your mention, I have also added a phrase "that is take from [13]" in the revised version and added ", source

in [13]" in the caption of Fig.3, to further give a detail explanation on the source of the figure. We think that this is not a serious issue regarding to copyright laws.

Page 7, paragraph 2, line -10: "Example 2 (13)" → "Example 2 13"

Sorry, we have not got your point on this comment. For the citation rules of QNU Journal of Science, superscripts must be used wherever we insert in-text citations. From our point of view, this presentation is correct. Please let me know if you still do not agree with this typo.

Finally, we would like to thank once more the reviewer for the time dedicated to our manuscript. We hope that the additional explanations satisfy the reviewer.