Response to Reviewer 2 Comments

Point 1: The explanations for some acronyms are repeated. For example, PP-NFTSMC-ESO in lines 113, 245.

Response 1: Thank you for the suggestion. We go over the article again and get rid of the repeated explanations for the acronyms.

We updated the manuscript by getting rid of the repeated explanations for the acronyms in line 246-247, line 332-333.

Point 2: In line 172, the sentence "…including modeling uncertainties and unknown internal and external disturbance" is inappropriate since modeling uncertainties can be regarded as parts of unknown internal disturbance.

Response 2: Thank you for this suggestion. Yes, the modeling uncertainties can be regarded as parts of unknown internal disturbance, and it should be revised as "parametric uncertainties".

We updated the manuscript by replacing the "modeling uncertainties" as "parametric uncertainties" In line 175.

Point 3: In line 221, the authors claims that the ESO can achieve the finite-time convergence of the estimation errors. It is incorrect. The ESO is not a type of finite-time observer and cannot guarantee the convergence of the estimation errors to the origin in a finite time.

Response 3: Thank you for this suggestion. Yes, the ESO is not a type of finite-time observer and cannot guarantee the convergence of the estimation errors to the origin in a finite time, it can only guarantee the boundedness of the estimation errors.

We updated the manuscript by replacing "with a finite-time convergence of the estimation errors" as "with a boundedness of the estimation errors" in line 224-225.

Point 4: For the simulation tests, the tested PID controller is actually a PI controller. Therefore, please use PI controller rather than PID controller to describe this tested controller.

Response 4: Thank you for the suggestion. Yes, we actually used PI controller in the manuscript.

We updated the manuscript by replacing the PID controller to PI controller in line 138, line 332, line 334, line 339, Table 4, line 395, and Table 6.

Point 5: In Remark 1, the authors claim that the parameters of all tested controllers are selected by trial and error. Indeed, it is the most widely used method to select the parameters for the sliding-mode controllers in practice. As for the PI controller, however, there are many popular methods with rigorous theoretical demonstrations. Please choose one of them rather than the

trail-and-error method to select the parameters of the PI controller and explain why such parameters are selected.

Response 5: Thank you for the suggestion. In fact, we use the PID Turner Toolbox of MATLAB to adjust the PID parameters in the simulation. However, due to the system parameter fluctuation and disturbances, the adjusted parameters of PID Turner are usually not good enough, thus the final PID parameters still need to be obtained by fine-tuning on the basis of the PID Turner results.

We updated the manuscript to simply introduce the selection of PID parameters by the PID Turner Toolbox of MATLAB in Remark 1 in line 339-341.

Point 6: Regarding References, some important literatures about the controller tuning are missing. For example, the bandwidth selection for the ESO is based on (16) in this manuscript, which was given and discussed in the following article. Please add it as reference and highlight that the bandwidth selection is based on the method proposed by this article.

Response 6: Thank you for the question. The bandwidth selection for the ESO is really forgotten to discuss in the manuscript. We only give the details of the designing process of the ESO by referencing the article [48] as follows, which is also written by the author "Gao Zhiqiang" of the proposed article.

[48] Zheng, Q.; Gaol, L.; Gao, Z. On stability analysis of active disturbance rejection control for nonlinear time-varying plants with unknown dynamics. 46th IEEE Conference on Decision and Control. 2007, pp. 3501-3506.

We updated the manuscript by adding the proposed reference as [49] to describe the bandwidth selection in line 350 and the designing process of the ESO in line 235.

Point 7: More papers about disturbance-observer-based second-order sliding mode control and its application published in recent years should be added.

Response 7: Thank you for the question. Some of the latest research results are not included in the manuscript due to an oversight.

We updated the manuscript by adding the proposed references as [15] in line 76-79 and [42-44] in line 106-107.