Dear Reviewer,

Thank you very much for carefully reviewing our manuscript with ID: sensors-2952697. There is no doubt that these insightful comments play a significant role in improving the quality of the paper. We carefully considered these valuable comments and then tried our best to improve this paper. We sincerely hope that our point-to-point responses and modifications will meet your satisfaction. The following are the paper's corrections (in red) and responses (in blue) to the reviewers' comments.

Comment 1: In my opinion, the title is not formulated quite correctly. Since the novelty of the article does not relate to the phase angle model as such, but to the method of full-scale 3D reconstruction using local calibration, the title should be formulated differently. I think the following option would be suitable: "Use of phase-angle model for full-field 3D reconstruction under efficient local calibration." Or even shorter: "Full-field 3D reconstruction using efficient local calibration." Also, there are a number of specific remarks.

Response: Thank you very much for your insightful suggestions. We strongly agree with your perspective and have revised the title to "Use of phase-angle model for full-field 3D reconstruction under efficient local calibration" in page 1 lines 2-3.

Comment 2: Rows 84-87: "There is currently a lack of a concise calibration strategy that can infer 3D reconstruction information beyond the range of the calibration plate for unidirectional fringe projections in reconstructing large-scale scenes." Why lack of? The strategy was already published by the authors in [23].

Response: Thank you very much for your valuable comments. The expression here should be that the field has not yet been thoroughly researched and focused on. To address your concerns, we revised this sentence to "At present, the calibration strategies in unidirectional fringe projection profilometry mainly focus on the reconstruction effect within the calibration area. Inferring 3D reconstruction information beyond the range of the calibration plate in reconstructing full-field scenes has not yet received in-depth research and focused attention." in page 2 lines 84-88.

Comment 3: Row 126: "$\boldsymbol{K}_c$ — are the camera's internal parameters". The camera's internal parameters are represented in equation (1) as a matrix with a number of variables which description is absent in the article. The description should be added.

Response: Thank you very much for pointing out this issue. To make the presentation more complete, we have added the description for $\boldsymbol{K}_c$ as "$\boldsymbol{K}_c$ are the camera's internal parameters, where f_u and f_v respectively denote the equivalent focal lengths in the horizontal and vertical directions, γ denotes the skew factor between the u-axis and v-axis in the imaging plane, and (u_0, v_0) represents the principal point of the pixel plane." in page 3 lines 127-130.

Comment 4: Rows 129-130: "… we can eliminate the lens aberration by the following equation:" It is not quite correct formulation. The lens aberrations are not eliminated but only taken into account. So, it would be more correct to write as "we can take the lens aberration into account with the following equations".

Response: Thank you very much for your valuable feedback, as it has drawn our attention to this

matter. We revised this sentence to "we can take the lens aberration into account with the following equations" in page 3 lines 133-134.

Comment 5: Row 186: "… and the two are at an angle of ". It is not clear what does "the two" mean here? May be incorrect English. Should be corrected.

Response: Thank you very much for your constructive feedback. For clearer expression, we revised this sentence to "Within the projection range, there is a projection plane with an angle of θ from the normal projection direction, which intersects with the orthogonal calibration plane at A. In addition, the angle between this projection plane and the orthogonal calibration plane is β, as shown in Figure 2(b)." in page 5 lines 188-191.

Comment 5: Rows 323-326: "Firstly, the correctness of the method was verified on the structured light system of the DLP projector; And use the same calibration strategy to test the applicability on emerging structured light projection devices, such as the FPP system of MEMS-mirror-based projectors." If there is firstly then where is secondly? Maybe it can be rewritten by the following way: " Firstly, the correctness of the method was verified on the structured light system of the DLP projector; And secondly, the same calibration strategy to test the applicability on emerging structured light projection devices, such as the FPP system of MEMS-mirror-based projectors was used." Or use some another formulation. Should be corrected.

Response: Thank you very much for your insightful suggestion. To address your concerns, we revised the sentence to "Firstly, the correctness of the method was verified on the structured light system of the DLP projector; And secondly, the same calibration strategy to test the applicability on emerging structured light projection devices, such as the FPP system of MEMS-mirror-based projectors was used.". in page 11 lines 327-330.