Referee 1

# Free form review

* The authors have removed the simulation section and related figure from the manuscript. While I still believe the simulation results could have been integrated to support the phantom study, I understand the authors concerns for the added length and complexity this would contribute to the paper. Without the simulation results, this work still represents a substantial extension of the current gold standard method of calcium scoring (Agatston) that is supported by phantom study results.
* The authors have adequately addressed each of my prior concerns related to 22-1720R1.

# Recommendations for improving manuscript

* Comment to authors: You may consider reviewing whether the number of significant figures is appropriate and consistent throughout the manuscript. As a single example, in some sentences "15.000%" is used while elsewhere "15.0%" is used. Three significant digits may not be appropriate as shown in Table 3.
  + Thank you for pointing this out. We have updated all the figures and text to accurately reflect the accuracy of measurement, up to two digits beyond the decimal place.

Referee 2

## Recommendations for improving manuscript

* The revised manuscript addresses most of my remaining concerns. I would encourage the authors to continue working on this scoring algorithm to see if this improves clinical risk prediction, as it seems to be an improvement over other scoring methodologies such as SWCS that the authors cite at the start.
* 1. When extracting the centerline of the coronary arteries, it seems to me that you could use some other surrogate for the background rather than the annulus. For example, you could use a blood ROI in the aorta. This measurement of blood may also help you with autosegmentation. Just a thought for an alternative approach.
  + Thank you for this suggestion. As we progress to more realistic phantoms and patients, we will investigate the feasibility of an accurate blood ROI as the surrogate for the background ROI. This is likely to decrease false positives as you highlighted previously.
* 2. I agree with the new calculations of FP/FN rates and would suggest you move this to the abstract. Currently you state that "The percentage of false-negative calcium scores was lower for integrated calcium mass (9.44%) than Agatston scoring (27.78%)." I would suggest that you change this to the 1.5 std dev value, so that the FN percentage increases, to be consistent with the body of the text. You could also state that your technique decreases FPs compared to Agatston.
  + Thank you for pointing this out. We updated the abstract to be consistent with the rest of the manuscript.

Associate Editor

# Comments to author

* The referees have expressed that the major points from the prior critiques have been addressed. To ready this work for publication, the authors should make revisions to address two remaining minor issues:
* 1) Review the manuscript to ensure that the number of significant figures is appropriate and consistent throughout (e.g. see Lines 305-306, also tables and figures),
  + This has been updated throughout the text.
* 2) Update the reporting of false positive and false negative rates in the abstract (Line 55) to reflect the new values reported in the body of the paper, as suggested by Referee 2.
  + The abstract is now updated and consistent with the rest of the manuscript.