



Student Name Brian Alden Student ID *****

Doctoral Degree in Astrophysical and Planetary Sciences

Thesis Title:

Investigating the Properties of Merging Galaxy Clusters with Radio Halos/Relics Using X-ray Derived Pressure Maps

Have you performed research involving human subjects which requires approval from the Institutional Review Board (IRB)? Yes No

IRB Protocol Number _____

Have you used live animals, animal tissue, or observational animal work which requires approval from the Institutional Animal Care and Use Committee (IACUC)? Yes No


IACUC Protocol Number _____

Attach the final copy of thesis/dissertation for committee review. While formatting changes may be requested by the Graduate School, the content of the attached document should be final.



Approvals:

Committee Chair Name Jack Burns

Signature  Date Signed 4/14/2023

Committee Member Name Nils Halverson

Signature  Date Signed 4/14/2023

The final copy of this thesis has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above-mentioned discipline.