Scientific Performance of the Rubin LSST Data Products

Leanne P. Guy[1]

[1]*LSST Project Office, 950 N. Cherry Ave., Tucson, AZ 85719, USA*

ABSTRACT

Extensive science verification and validation of the Rubin Observatory LSST Data Management System has been carried out making use of simulations, pre-cursor datasets, and data from the commissioning science verification and validation surveys. We detail the tests carried out and whether they pass the LSST science requirements at the necessary level to enable LSST science. In cases where they do not, we explain why and the implications for science with LSST. We also discuss planned improvements necessary to fulfil the LSST 10-year science requirements.

Keywords: Astrophysics - Instrumentation and Methods for Astrophysics — methods: data analysis — methods: miscellaneous

1. INTRODUCTION

Introduce the data products, pipelines and science platform and the catalogues

2. LSST SCIENCE REQUIREMENTS

Summary of the relevant LSST science requirements

3. VERIFICATION AND VALIDATION DATASETS

Here we describe the test datasets: Wood-Vasey et al. (2024)

4. TOOLING AND FRAMEWORK

Reference some of the tooling used for QA from Square Krughoff (2019) and how this is used to do QA, e.g SQuaSH, lsst.verify.

4.1. *ap_verify*

4.2. *validate_drp*

4.3. *DRP pipe_analysis*

4.4. *data explorer*

5. TESTS OF LSST DATA PRODUCTS

5.1. *Calibration tests*

5.2. *Photometry tests*

5.3. *Astrometry tests*

.. and many more sections

6. MEETING THE 10-YR SCIENCE GOALS

What does the science verification and validation say about the prospects for meeting the 10-year survey science goals. How is the performance expected to improve over the successive data releases?

7. SUMMARY AND DISCUSSION

Facilities: Rubin (LSSTCam), RubinAux (LATISS)

Software: Rubin Science Platform (Dubois-Felsmann et al. 2019), LSST Science Pipelines (**?**), Qserv (Wang et al. 2011)

REFERENCES

Dubois-Felsmann, G., Economou, F., Lim, K.-T., et al. 2019, Science Platform Design, Vera C. Rubin Observatory. https://ldm-542.lsst.io/

Krughoff, K. S. 2019, LSST Data Management Quality Assurance and Reliability Engineering, Vera C. Rubin Observatory. https://pstn-023.lsst.io/

Wang, D. L., Monkewitz, S. M., Lim, K.-T., & Becla, J.
2011, in State of the Practice Reports, SC '11 (New
York, NY, USA: ACM), 12:1–12:11

Wood-Vasey, M., Bellm, E., Bosch, J., et al. 2024, Test
Datasets for Scientific Performance Monitoring, Vera C.
Rubin Observatory. https://dmtn-091.lsst.io/