New Horizons Ralph MVIC Data Review

Reviewer: Xiao-Duan Zou (Planetary Science Institute)
Feb 10 2025

1. Datasets overview
- PDS version: PDS4
- 3 sets from MVIC.

  pds:nh_mvic:kem2_cal::1.0 (180 files in total)

  pds:nh_mvic:kem2_raw::1.0 (180 files in total)

  pds:nh_documents:ralph::3.0

- Data version: **1.0**

- Mission phases:
  Kuiper Belt Extended Mission 2

- Summary:

mc0_0557739170_0x536_sci.fit

All the raw and cal images can be correctly opened. Only minor issues.

2. Review process
- Use astropy fits.open and DS9 exam all fits
- Test files with pds4_tools: Read all .fit and label files to check image content (**all can be read correctly**)
- Check consistency between levels with tools:

Diff Files 23.1 and Beyond Compare 4.4.1

- Check the headers and compare the labels between sets
- Check error array and quality array, test if all are 0-arrays.
- Compare labels and sis file
- Compare documents
- Collect aspect data from all images,

3. Document/Calibration
- **Quality flag explanation**, add a value list to the overview.txt

4. Data
    - Files can be read by python, pds4 python tool and ds9.
    - Open and save to png with PDS4 tools.
    - "Partially Processed", is this a standard name for this kind of processing level? If not, I suggest "Partial_Calibration_Applied"
    - SPICE data are available and included in the label
    - Same image viewer error message as LORRI, for both errors and data_qual images, "*No valid/supported Display Settings found. Displayed image may not be correct.*" **Correct the showing direction in labels.**
    - In the data array section of the data label, What kind of errors are stored? Is not clear for the error extension.
    - Quality flag is **all zero or -1, need fixing.**

5. Minor edits:
    - distorion —> distortion
    - Make the title consistent between data processing levels:
        New Horizons Ralph MVIC KEM2 Raw Data Set Overview
        New Horizons MVIC Partially Processed KEM2 CRUISE Data Set Overview

6. Conclusion: Minor edits. Certifiable.