Contribution ID: **30**   Type: **Poster presentation (90 second oral summary, 90 minute poster session & free presentation times over 3x 40m coffee breaks)**

Read Noise Biasing on the Nancy Grace Roman Space Telescope

Tuesday, 12 March 2024 14:30 (1h 30m)

The Nancy Grace Roman Space telescope, set to launch in 2026, will bring unprecedented precision to measurements of weak gravitational lensing. Because weak lensing (WL) is an inherently small signal, it is imperative to minimize systematic errors in measurements as completely as possible; this will ensure that the lensing measurements can be used to their full potential when extracting cosmological information. The Roman WL program is further complicated by the undersampled nature of its images, requiring the use of an image combination algorithm to construct oversampled images to simplify signal processing and avoid biases from discontinuity. In this work, we use laboratory tests of the Roman detectors, simulations of the Roman High Latitude Survey observations, and the proposed Roman image combination pipeline to investigate the impact of detector read noise on weak lensing measurements from Roman. We characterize the specific signatures of the noise fields in the resultant images and measure simulated galaxy shapes to determine the magnitude of shear biasing that will be induced by the read noise.

contribution subject matter

noise characteristics

Keywords for your contribution subject matter (this will assist SOC in accurately characterizing your contribution)

Read noise, weak lensing, image processing, Roman telescope

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