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System Agnostic Data Reductions for Astronomy

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Presenting the Containerized Automated Radio Astronomy Calibration (CARACal) pipeline, a system and telescope agnostic reduction pipeline for radio interferometer data. CARACal leverages the portability and flexibility enabled by the Stimela framework (Makhathini, 2016) to provide a simple yet powerful pipeline for both experienced and novice users.
Unlike other pipelines, which are instrument-specific (e.g. CASA, SPAM, CAPTURE, LOFAR) and tend to be opaque and hard to configure, CARACal can be used on data from any radio interferometer as long the data are stored in the standard Measurement Set format (Kembal and Wieringa 2000). CARACal can be configured via a simple YAML file and only requires a Python3 interpreter and containerization software like Apptainer and Docker. This means astronomers, non-expert users in particular, can focus on configuring and optimizing their pipelines instead of installation and system configuration issues. I will also present some interesting CARACal-enabled results from data from the MeerKAT telescope.

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