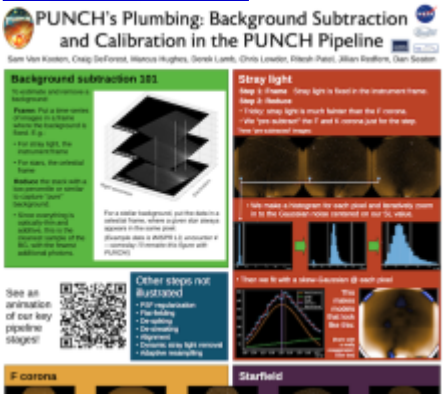
Samuel
Van Kooten
SwRI Boulder
Craig DeForest, SwRI Boulder
Marcus Hughes, SwRI Boulder
Derek Lamb, SwRI Boulder
Chris Lowder, SwRI Boulder
Ritesh Patel, SwRI Boulder
Jillian Redfern, SwRI Boulder
Dan Seaton, SwRI Boulder
Poster
PUNCH measures the K-corona against background signals that are many orders of magnitude brighter, with the added challenge of making sensitive polarization measurements. To build seamless mosaics from four separate imagers, we require very high-precision background subtraction and calibration across the entirety of each field of view. In this presentation we present highlights from the PUNCH pipeline, in which we estimate and subtract stray light (including very dynamic earthshine), the F corona, and the starfield. These processes are demanding, requiring robust photometry, nuanced handling of a spatially-variable PSF, sub-pixel alignment accuracy, and abundant computational resources. Successful execution of these subtraction techniques (and the ability to run them round-the-clock in our automatic pipeline) is necessary for clean visualizations of the corona and solar wind and to support mission science with high-quality inputs for methods such as flow tracking and Fourier filtering—methods which would otherwise struggle or fail when encountering image artifacts. Our approach builds on methods developed for missions such as STEREO/HI-2 and PSP/WISPR, and all of our software is open-source Python code.
Poster PDF
vankooten-sam.pdf


Meeting homepage
PUNCH 7 Science Meeting
Download Abstract