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Experimental confirmation for CLASP's spectrograph alignment procedure.

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The Chromospheric Lyman-Alpha Spectro-Polarimeter (CLASP) is a sounding-rocket instrument under development at NAOJ. CLASP's goal is to achieve an unprecedentedly accurate polarization measurement of the Ly-α line (121.6nm), which is emitted in the solar upper-chromosphere. Reaching such accuracy requires a careful alignment of the spectrograph's optical elements such as a grating and off-axis mirrors to optimize the image quality at Ly-α. However, Ly-α is absorbed by air and therefore optics alignment has to be done under vacuum condition, which makes the procedure difficult. To bypass this issue,the tilt adjustment of off-axis mirrors will be done in visible light (VL), using a VL grating designed with the same diffraction angle as the Ly-α flight grating. After alignment, this VL grating will be replaced by the Ly-α flight grating: only the tilt adjustment for the Ly-α grating and CCD defocus adjustment will be done in a vacuum chamber.

This poster will present details about an experiment designed to confirm our alignment procedure for the CLASP spectro-polarimeter. A similar configuration as the CLASP design was set up with an He-Ne laser (632.8nm), only using commercial optical elements and jigs. Resulting image quality was close to the expected quality given by CODE V ray tracing simulation and surface accuracy measurements of the optical surfaces used in this experiment explained differences with the expected image quality. We confirmed the alignment procedure through the experiment and will discuss the influence of the surface figure accuracy on our measurements.