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Venus Ground-based Observations: A Proposal

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“In Venus Veritas”, a paraphrase of the ancient Latin aphorism, is a valid view of the knowledge to be gleaned from observations of the Venus nightglow. Further ground-based Venus observations will lead to more information on atmospheric processes. Planetary nightglow observations are complicated by the fact that large telescopes are required, not only to give adequate spatial resolution, but also for the spectral resolution that is needed to separate – by their Doppler shifts - equivalent terrestrial and Venus features, cf. the oxygen green line.
On systems like the 10-meter Keck telescopes it is extremely difficult to obtain assigned observation time, even though Venus can only be seen for a limited period after sunset or before sunrise. We have executed an efficient procedure for time-sharing to achieve a rapid Venus observation on Keck I/HIRES. Observations are started immediately after local sunset, and after two separate 8-minute data collection periods, we are able to return the instrument to the astronomers less than half an hour after sunset, well before the start of astronomical twilight. By use of a Polycom connection to an experienced operator, the astronomers at the site (or a remote location) are guided through the steps required for a successful Venus nightglow measurement. As a bonus of such early evening observations, a high-resolution spectrum of the terrestrial dayglow is simultaneously collected.