OBSERVING REQUEST
University of Arizona Observatories

Year: 2015 **Term:** Aug–Dec **Proposal type:** engineering⋆

Engineering at the 90-inch

P.I.: Bob Peterson (SO; *bpeterson@as.arizona.edu*; (520) 621-5136)

CoI(s): Bill Wood (SO), Paul Smith (SO), Chris Johnson (SO), Gary Rosenbaum (SO), Joe Hoscheidt (SO), Jeff Rill (SO)

Abstract of Scientific Justification

Engineering time is requested for the 90-inch telescope and facility instrument repair, maintenance, and improvement. In the past, this time has proved indispensable in diagnosing and correcting problems that have developed suddenly and occurred intermittently. The ability to respond quickly to these problems has undoubtedly saved valuable observing time and improved the quality of observations obtained with the telescope. These engineering nights will be used to address a variety of issues. We are interested in testing strategies to monitor and eventually improve the image quality delivered by the telescope with as little impact on the overall operations budget as possible. In addition, continued steps in upgrading the current telescope control system (TCS) to the new, Linux-based "next generation" TCS will be made. These improvements will pave the way for incremental progress toward the ultimate goal of automating the telescope. Finally, time will be used to ensure that 90Prime and telescope are in good working order prior to the long observing runs required by TAC-approved large projects expected during this semester.

Summary of observing runs requested for this project

Run	Telescope	Cage	Instrument	PI	AO	Nights	Moon	Scheduling Optimal	Scheduling Acceptable	Sharing Poss.	Sharing Adv.
1	90"	any	any			1	bright	Sep	Sep-Oct	yes	no
2	90"	any	any			1	bright	Oct	Oct-Nov	yes	no
3	90"	any	any			1	bright	Nov	Oct-Nov	yes	no
4	90"	any	any			1	bright	Dec	Nov-Dec	yes	no

Scheduling constraints and unusable dates *(up to 4 lines)***:** If at all possible, it is best to avoid Friday, Saturday, and Sunday nights to minimize disruption to the schedules of Mountain Operations staff.

no text past this line

A ⋆ appended to the proposal type indicates a continuation proposal; a ⋆ appended to the name of a proposer indicates the proposer is a (graduate) student; a proposer whose name is underlined is certified on the proposed telescope/instrument combination; if a ∗ appears within the PI or AO box in the observations summary table, the instrument is a PI instrument and/or Adaptive Optics are requested – signatures are required on the next page.

Target list (attach list if longer than 26 objects)

#	Object	RA	Dec	mag / color / type / redshift / comment / etc.
1	Random calibration star	00:00:00.00	+00:00:00.0	

Approval for Instrument Use from PI: _____

*(have instrument PI signature appear on, or attach PI e-mail to, **all** copies)*

Graduate students *(provide the following information for **each** student named as PI or CoI on the cover page. Have the advisor's signature(s) appear on **all** submitted copies)*

Student's Name	Advisor's Name	Advisor's Signature	2nd-yr	Thesis

Scientific Justification

We request a bright night each month on the 90-inch telescope for general maintenance, trouble shooting, and to respond to technical problems that may crop up during the semester with the telescope and/or its instrumentation. In the past, we have found that setting aside a small number of nights during a semester for these types of activities has improved the overall observing efficiency of the telescope since technical resources are able to be brought to bear to solve problems much more quickly than otherwise possible if no flexible engineering time was available.

Historically, one bright night per month has been used to attend to technical issues with the Bok Telescope. Some of this time request will be devoted to continuing a diagnostic program that explores the elements determining the image quality (seeing) of the telescope/site. The ultimate goal of this exercise is to identify ways to significantly improve the image quality delivered by the 90-inch telescope.

During 2014–15, the initial steps in updating and upgrading the old DOS-based telescope control system will be taken. The changeover to the Linux-based TCS is needed because of hardware components required for the current system that are no longer available. The TCS upgrade is also needed in the event that the observatory desires to make the modifications necessary for the telescope to operate in either remote or fully autonomous observing modes.