



# CCD SLOAN ugriz Filters





## CCD Filters - SLOAN ugriz Filters

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### Overview

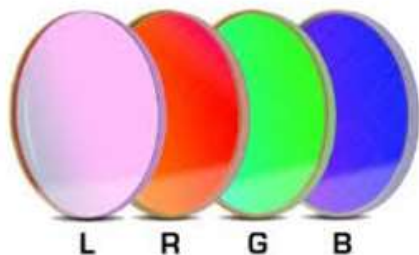
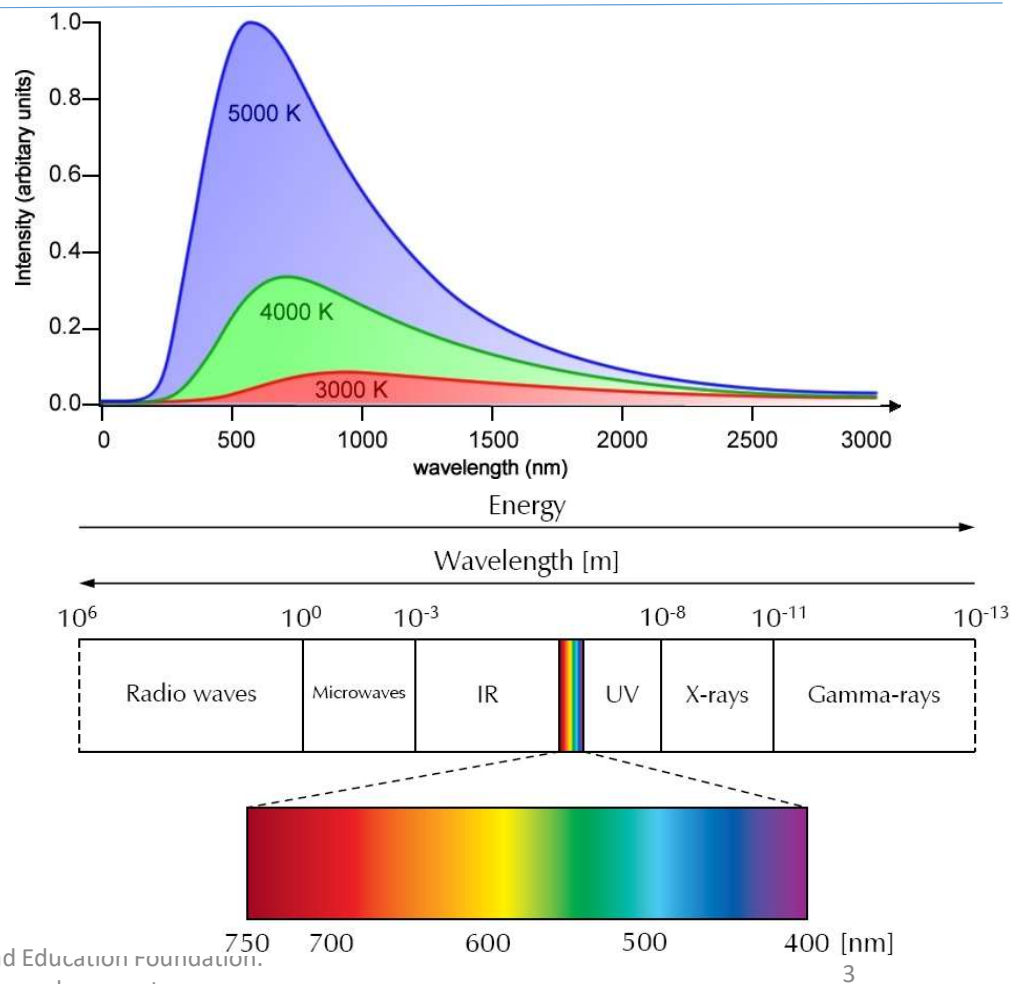
Here we introduce one of the two standardized set of filters you will use on projects with BRIEF: SLOAN ugriz.



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## Review

In the video for CCD Filters Overview, you learned about Black Body Radiation and Wien's Law of Displacement, and how filters can be used to isolate EM bandpasses.



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### SLOAN Filters: ugriz

Designed for the Sloan Digital Sky Survey (SDSS). Is now one of the most common and important photometric systems.

Five total filters:  $u'$   $g'$   $r'$   $i'$   $z'$  covering from 300 – 1100 nm

Each response curve has a different shape and accounts for the effect of the Earth's atmosphere

Peak/Center of each bandpass:

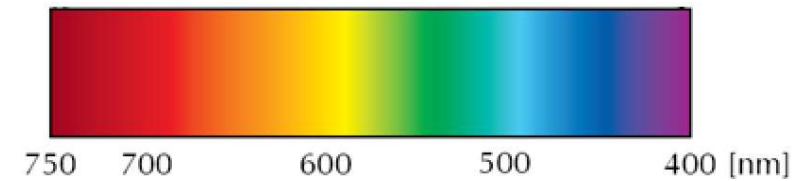
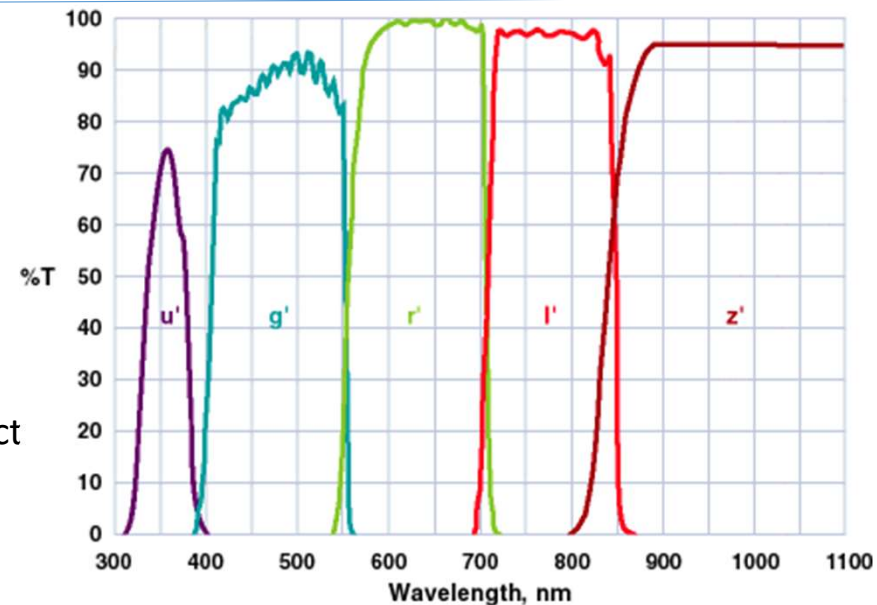
$$u' = 350 \text{ nm}$$

$$g' = 480 \text{ nm}$$

$$r' = 625 \text{ nm}$$

$$i' = 770 \text{ nm}$$

$$z' = 910 \text{ nm}$$



The use of lower case letters allows for distinction from JC filter sets.



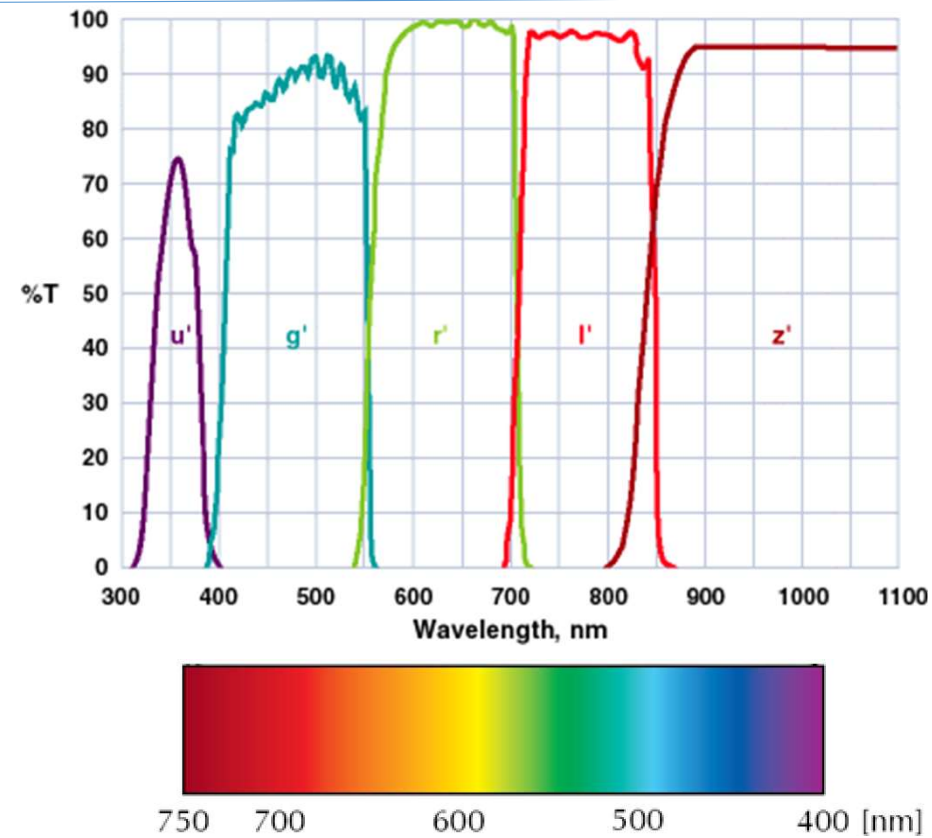
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### SLOAN Filters: ugriz

Provide high efficiency for faint object detection and basically cover the entire accessible optical wavelength range.

The filter responses have a sharp cutoff and exhibit wide plateaus terminated with sharp edges.

The exceptions are the u' filter and the z' filter





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### Summary

The SLOAN filters were made for imaging deep galaxies.

Their separation in bandpasses, and thus little overlap, has led to their use in classification of other systems, such as Stellar Types

To differentiate between Johnson-Cousins and SLOAN, SLOAN uses lower case letters

Whether using Johnson-Cousins or SLOAN, the overall imaging platform would still need to be calibrated against standard stars.



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***Questions?***