

# Weekly Report

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## 1 Spectral types and color dependency

In the previous report, I talked about the issue of correcting for how the imagers receive light over a wide range of wavelengths, so that the measurements do not exactly correspond to recorded magnitude values. I proposed using star magnitudes and color indices in conjunction with the spectral sensitivity characteristics specific to the imagers to produce a magnitude value equivalent to the measurements.

I realized that there is another way to get around this issue, using readily available information. Stars are categorized by spectral type, which is directly related to a star's color and the shape of its spectrum, meaning different stars of the same spectral type or similar ought to have similar color indices, for example. Therefore, grouping stars into sets within which stars have similar spectral types ought to ensure that the instruments respond identically to each of the stars being compared, within each set of stars.

With this in mind I put together data on two sets having four stars each. The group of Vega, Sirius, Rigel and Deneb have spectral types A0, A1, A2 and B8 respectively; while Deneb possesses a different spectral classification than the other three stars the 8 indicates that Deneb is eight tenths of the way to the next spectral class, which is the A class. Similarly, for Arcturus, Aldebaran, Pollux and Capella, of type K5, K1, K0 and G8, Capella is eight tenths of the way to the K class of stars.

It will still be useful to be able to compare stars independent of their color using the former proposed method, particularly for the task of absolute calibration. However, with stars grouped by color it might be possible to find a set of correction factors that each apply for a specific range of spectral types, instead of having to perform the correction for each star individually based on color index.