Standard Stars - CCD Photometry, Transformations and Comparisons

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We discuss variations of the atmospheric extinction coefficients and transformation equations to the standard *UBVRI* system based on observations of standard stars during 1996-1997 at Siding Spring Observatory using a thinned SITe CCD and coloured glass filters. In the transformation from the original natural system to the Landolt version of the standard system, a large non-linear term related to the Balmer discontinuity was required for the U transformation. We then modified the U filter and the subsequent transformation to the SAAO version of the standard *UBVRI* system had only small non-linear correction terms for U, B, and I. The correction terms relating to U and B are evidently due to the Balmer discontinuity, while that relating to I seems to be due to the Paschen discontinuity at $\lambda \approx 8200$Å. We also compared the results with Landolt's observation, and confirmed the difference between the two sets of standard stars (SAAO and Landolt).