

**Photometric Analysis: A More Efficient way to Calculate
Galaxy Redshifts**

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The aim of this project is to measure redshifts for a set of galaxies whose morphological properties are being studied using near-infrared adaptive optics (AO) imaging in order to explore the evolution of galaxies. We have imaged seven high Galactic latitude fields within the isoplanatic patches of bright stars with approximately 20 galaxies around each of them. We measured the brightness of these galaxies using the Keck Telescope in four optical and near-infrared filters. Model galaxies with different star formation histories and metal content are used to determine the most likely redshift for each galaxy in order to match the observed brightness at each wavelength. The results were compared with more accurate spectroscopic redshifts (typically 0.4%) that are available for some of the galaxies. We determined that the photometric approach, while significantly less accurate (about 10%), provides consistent redshifts with far less telescope time. Our results are very promising and will clearly contribute to our understanding of how large galaxies like the Milky Way have formed and evolved.