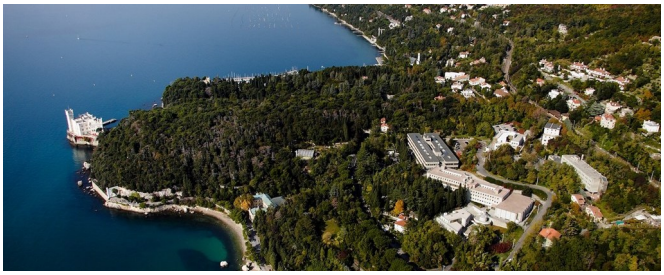

Contribution ID: **59** Type: **not specified**

Astrometric Redshifts of Supernovae

Wednesday 30 August 2023 21:50 (5 minutes)

I would like to present a poster on this work. Differential Chromatic Refraction (DCR), caused by the wavelength dependency of the refractive index of our atmosphere, is usually an effect we need to mitigate for ground-based observations. However, DCR depends on the spectral energy distribution (SED) of an object, meaning that light from sources such as supernovae (both Type Ia and Type II) and quasars with distinctive emission lines get refracted differently depending on the redshift of the source. We investigate how this can be used to our advantage to estimate astrometric redshifts of supernovae from multi-band, time-series photometry. First, we calculate these effects using image simulations and evaluate the accuracy of the astrometric redshifts, how they depend on observing strategies such as filter choices and air mass distribution as well as analysis methods. We then quantify how much combining our astrometric redshifts with conventional photometric redshifts improves the measurements. We believe that our analysis will enhance the accuracy of redshift measurements for the upcoming Large Synoptic Survey Telescope (LSST) observations, which will be valuable especially since we will not be able to obtain spectroscopic redshifts from the vast number of supernovae that will be detected.

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Session Classification: Posters of wednesday (ignore time)