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Recent progress of the long-wave IR instrument for atmosphere monitoring within the StarDICE experiment

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With the upcoming Legacy Survey of Space and Time, the number of observed type Ia supernovae is expected to substantially increase, leading to a reduction in statistical uncertainties and thus placing flux calibration as the predominant source of uncertainty in constraining the dark energy equation of state parameter w.

Atmosphere is one of the last remaining sources of systematic uncertainty among others, limiting photometric observations accuracy. In the context of the StarDICE experiment that aims to refine the spectrophotometric reference CALSPEC star catalog down to the millimagnitude level, atmospheric effects need to be corrected with high-precision. Gray extinction is one such atmospheric effect causing wavelength-independent flux attenuation that is challenging to quantify. One proposed solution is the use of an uncooled infrared thermal camera to image the long-wave infrared range (10-12 µm) corresponding to the atmosphere transparency window. In this presentation, I will talk about the basic concept of the instrument, the on-going calibration data analysis, and some preliminary results of recent data obtained in parallel to the StarDICE *ugrizy* photometric observations.

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