

A SYNOPTIC VIEW OF THE MAGELLANIC CLOUDS:  
VMC, GAIA AND BEYOND

ESO-HQ, GARCHING BEI MÜNCHEN, GERMANY  
September 9-13, 2019

---

## Photometric Metallicities of the Large and Small Magellanic Clouds

**Miller Amy, Montana State University**

The distribution of stellar metallicities across the Large and Small Magellanic Clouds is a key ingredient to understanding the processes that have shaped their evolution, and remains a rich ground for exploration. I use data from the Survey of Magellanic Stellar History (SMASH), a photometric survey of the Magellanic Clouds that contains approximately 400 million objects in 197 fields that were obtained with DECam on the CTIO Blanco 4m telescope. SMASH covers 2400 square degrees to 24th magnitude in ugriz, encompassing a depth of 2 magnitudes below the oldest main-sequence turnoff stars. The DECam u-band is sensitive to metallicity for main-sequence turn-off stars, which is calibrated using SDSS and LAMOST spectroscopy in overlapping regions. This analysis is used to make accurate metallicity maps of the main bodies of the Clouds and their peripheries. Ultimately, these metallicity maps will help us trace out population gradients in the Clouds, uncover the origin of their very extended stellar peripheries, and elucidate the consequences of stripping stars and gas off the Clouds when they fall into the Milky Way halo.