

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

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

**New Models of the Origin of the
Leading Arm and the Magellanic
Stream**

Lucchini Scott, UW Madison

One of the major problems with simulations of the Magellanic Stream is determining how to pull 10^9 solar masses of gas out of the Large and Small Magellanic Clouds to match observations. Specifically, simulations based on interactions between the Clouds underestimate the total mass of the Stream by a factor of 10. In addition, it's unclear if the tidally produced Leading Arm can survive in the Milky Way's hot corona. Here we present a new set of hydrodynamical simulations that not only account for mutual interactions between the Clouds, but also include a warm gas halo around a massive LMC, with the Clouds falling into the hot corona of the Milky Way. I will discuss how this model better matches the total mass of the Stream, especially considering its ionized component, and what the fate of the Leading Arm may be in light of the orbital history of the Clouds. Finally, predictions of the metallicity will be provided to compare with existing HST data.