

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

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**A near-infrared view of the  
morphology of the Magellanic Clouds  
using the VMC and VHS surveys**

**El Youssoufi Dalal, Leibniz Institute of Astrophysics  
Potsdam (AIP)**

We present the morphology of the Magellanic Clouds (MCs) using data from the VMC survey across an area of  $105 \text{ deg}^2$  and  $42 \text{ deg}^2$  towards the LMC and SMC, respectively, using various stellar populations for which we estimated the ages using theoretical evolutionary models. Our morphology maps reveal detailed features in the central regions that are characterised for the first time at spatial resolutions of  $0.13 \text{ kpc}$  (LMC) and  $0.16 \text{ kpc}$  (SMC). In the LMC, we find that main sequence stars show coherent structures that grow more enhanced with age and trace the multiple spiral arms of the galaxy while intermediate-age and old stars, despite tracing a regular and symmetrical morphology, show central clumps and hints of spiral arms. In the SMC, intermediate-age populations show signatures of elongation towards the Magellanic Bridge that can be attributed to the LMC-SMC interaction 200 Myr ago. They also show irregular central features potentially suggesting that the inner SMC has also been influenced by tidal interactions. Furthermore, the outskirts of the MCs beyond the footprint of VMC were explored using the VHS survey and tidal tails related to the LMC and SMC interactions are detected.