

# Extinction Ratios in the Inner Galaxy as Revealed by the VVV Survey

Alonso-García, J., Minniti, D., Catelan, M., Ramos, R. C., Gonzalez, O. A., Hempel, M., ... & Zoccali, M. (2017). Extinction ratios in the inner galaxy as revealed by the VVV survey. *The Astrophysical Journal Letters*, 849(1), L13. <10.3847/2041-8213/aa92c3> Accessed 24 May 2021.

## Abstract

Interstellar extinction toward the Galactic Center (GC) is large and significantly differential. Its reddening and dimming effects in red clump (RC) stars in the Galactic Bulge can be exploited to better constrain the extinction law toward the innermost Galaxy. By virtue of a deep and complete catalog of more than 30 million objects at  $|l| \leq 2^\circ.7$  and  $|b| \leq 1^\circ.55$  obtained from VVV survey observations, we apply the RC method to infer the selective-to-total extinction ratios in the Z, Y, J, H, and Ks broadband near-infrared filters. The measured values are smaller than previously reported, and are not constant, with mean values of, e.g.,  $AKS/E(J - Ks) = 0.428 \pm 0.005 \pm 0.04$  and  $AKS/E(H - Ks) = 1.104 \pm 0.022 \pm 0.2$ . We also obtain a ratio  $AZ:AY:AJ:AH:AKS$  of 7.74:5.38:3.30:1.88:1.0, implying extinction toward the GC to follow a distribution as a function of wavelength steeper than previously reported, consistent with a power law  $A_\lambda \propto \lambda^{-2.47}$  in the near-infrared..