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Vista variables in the Via Lactea (VVV)

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Abstract. We describe a proposal for a public IR variability survey of the entire Milky Way Bulge and a large portion of the Southern Galactic Plane with VISTA at ESO Paranal Observatory. The survey will take about 180 nights, covering $5x10^8$ point sources within an area of about 600 sq deg, including 40 known globular clusters and more than one hundred known open clusters. The final products of our VVV survey will be a deep IR atlas of the bulge and inner disk, along with a catalogue of more than a million variable point sources. These will allow to map the 3-D structure of the bulge and inner disk (unlike single epoch surveys that only give 2-D maps) using well understood primary distance indicators such as RR-Lyrae stars, and to obtain important information on the age of the Milky Way stellar populations. The survey will also detect hundreds of star formation regions, and allow to examine the environmental dependence of star formation. The VISTA observations will be combined with data from MACHO, OGLE, EROS, 2MASS, DENIS, VST, SPITZER, HST, CHANDRA, INTEGRAL and ALMA for a complete understanding of the variable sources in the inner Milky Way. Several important implications for the history of the Milky Way, for globular cluster evolution, for the population census of the bulge and center, and for pulsation theory would follow from this survey.

Key words. Surveys – Stars: varaibles: general – Galaxy: bulge – Galaxy: disk – Galaxy: structure

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