

SEARCHES FOR VARIABILITY IN THE MILKY WAY BULGE WITH THE VVV SURVEY

R. K. Saito^{1,2}, D. Minniti^{2,3,4}, M. Catelan^{2,3}, F. Gran³, D. Iglesias³, G. Muro³, J. C. Beamin^{2,5}, and I. Dékány³

VVV is an ongoing near-IR, multi-band, time-series survey of the Galactic bulge and plane. Here we summarize the first results from a search for variability in selected fields of the VVV bulge area.

The VISTA Variables in the Vía Láctea (VVV) is an ESO public near-IR variability survey scanning the Milky Way bulge and southern Galactic disk (Minniti et al. 2010; Saito et al. 2012). VVV is producing a *ZYJHK_s* catalogue of about a billion sources over an area of 562 square degrees and upon completion will deliver *K_s*-band light-curves for a few million variable sources with 80-100 data-point covering many years (Catelan et al. 2013).

Data taken during 2010-2012 covered the whole VVV bulge area in the five passbands, plus up to 30–40 *K_s*-band epochs with a large baseline. From a total of 42 selected bulge tiles covering ~68 sq deg in both inner ($b < 2$ deg) and outer ($b > 8$ deg) part of the bulge we produced ~53 million light-curves with 16-40 data points per object. This data set allow us to start the search for variability in the Galactic bulge using different strategies. Figure 1 shows illustrative light-curves which summarize the first results from this search, from the study of tiny variations due to planetary transits in the outermost region of the VVV bulge area, to the discovery of hundreds of long period variables, and detection of microlensing events and explosive Nova eruptions in the Galactic center.

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¹Universidade Federal de Sergipe, Departamento de Física, Av. Marechal Rondon s/n, 49100-000, São Cristóvão, SE, Brazil (saito@ufs.br).

²The Milky Way Millennium Nucleus, Av. Vicuña Mackenna 4860, 782-0436 Macul, Santiago, Chile.

³Departamento de Astronomía y Astrofísica, Pontificia Universidad Católica de Chile, Vicuña Mackenna 4860, Casilla 306, Santiago 22, Chile.

⁴Vatican Observatory, Vatican City State V-00120, Italy.

⁵European Southern Observatory, Casilla 19001, Santiago 19, Chile.

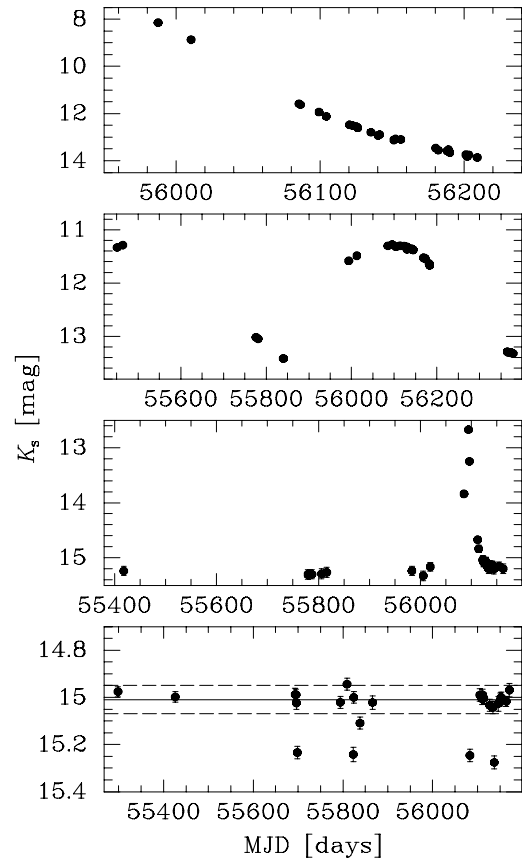


Fig. 1. Illustrative *K_s*-band light-curves from the VVV bulge area. From top to bottom: the nova VVV-NOV-002 (Saito et al. 2013), a long-period variable, a microlensing candidate and a transiting planet candidate.

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