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THE *VVV TEMPLATES* PROJECT TOWARDS AUTOMATED CLASSIFICATION OF VVV LIGHT CURVES

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The main goal of the *VVV Templates* Project is to build a large database of well-defined, high-quality near-IR light curves for variable stars of different types, which will form the basis of the VVV automated classification algorithms.

VISTA Variables in the Vía Láctea (VVV) is an ESO Public Survey that will take 1929 hours of observing time with the 4 meter VISTA Telescope, covering $\sim 10^9$ point sources across an area of 520 deg^2. Among the final product there will be a catalogue of more than 10^6 variable point sources in the K_s band (Minniti et al. 2010a; Saito et al. 2011).

Obviously, an automated classification scheme must be developed in order to properly classify the detected variable stars. In the near-IR, the high-quality templates that are needed for automated variable star classification algorithms are NOT available. As a matter of fact, both the number and the quality of most near-IR light curves present in the current literature are insufficient for training such algorithms. Furthermore, light curves of sufficient quality are entirely lacking for many variability classes.

With the aim of building our template light curve dataset, we have started an intensive monitoring campaign and we have been awarded observational time with several near-IR telescopes all over the world. The ongoing observations are performed, amongst others, at the following facilities: VISTA (ESO), SMARTS 1.3 m, Blanco Telescope (CTIO), REM (INAF), MiniTAO (University of Tokyo), in Chile; Carlos Sanchez Telescope (IAC) in Canary Islands; IRSF, 0.75 m Telescope (SAAO) in South Africa; 2 m Telescope (BOAO) in Korea; HC Telescope (IAO) in India.

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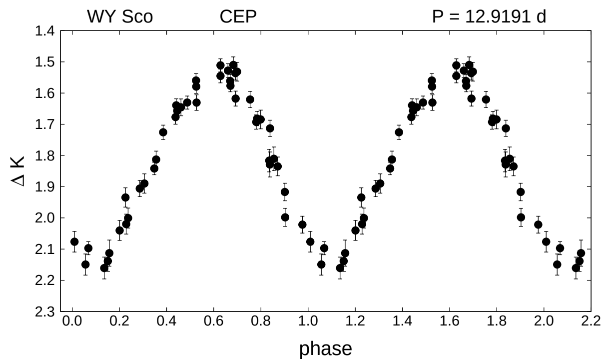

Fig. 1. Differential K_s light curve of the classical Cepheid WY Sco obtained with the REM Telescope during some preliminary tests in semester 2010A. The period shown in the header is taken from the General Catalog of Variable Stars.

One of our first light curves, taken with the REM Telescope, is shown as example in Figure 1. While the light curves quality of the observed up to the moment stars is still not entirely suitable for the construction of light curve templates, during these tests we have been able to get a first idea about the amplitude of several variability classes whose IR behavior were still unknown.

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