**Search for Blue Straggler Stars in Open Clusters from the VVV Survey**

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Bandung 2018

ABSTRACT

Open clusters (OCs) play important roles in astronomy, from stellar evolution to Galactic structure. Most OCs, if not all, are located on Galactic disc. Colour–magnitude diagrams (CMDs) of most OCs feature age-dependent stellar sequences such as fractions of the main sequence (MS), turn-off (TO) and giant branch (GB), that provide information for either stellar evolution and Galactic disc properties [1].

Blue straggler stars (BSS) are stars that reside on the upper-side of the CMD’s TO point, along the zero-age main sequence (ZAMS) line. They may exist within usually old star clusters, typically older than 108 years. They are found mostly in globular clusters (GCs) but sometimes they appear in younger ones like intermediate-age OCs. Since their discovery, BSS posed a challenge for stellar evolution because BSS’ evolution seems to lag compared to other stellar sequences within the same cluster [4].

The first and only catalogue of OCs hosting BSS, *Catalogue of Blue Stragglers in Open Clusters*, was made by Ahumada and Lapasset (AL95 in 1995; the revised version, AL07, in 2007). However, OCs which are located towards the Galactic center (1st and 4th quadrant) are less studied due to thick obscuration of interstellar matters. Recent survey by VVV (VISTA Variables in the Vía Láctea) from ESO focused its observation in infrared wavelength towards Galactic center. The survey has revealed a number of new star clusters [5]. In this study, we analyze the VVV survey data of two new clusters (VVV CL008 and VVV CL070) and NGC 5999 which has been identified to host BSS by [6]. We also construct a decontaminated CMD using the method explained by Bonatto and Bica (2007, 2010) and Borissova, et al. (2011). The final step is the determination of the existence of BSS in the OCs of interest using the method from Ahumada and Lapasset (2007) and Carraro et al. (2008).

*Keywords: Open clusters; Blue straggler stars; Field stars decontamination; VVV Survey*

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