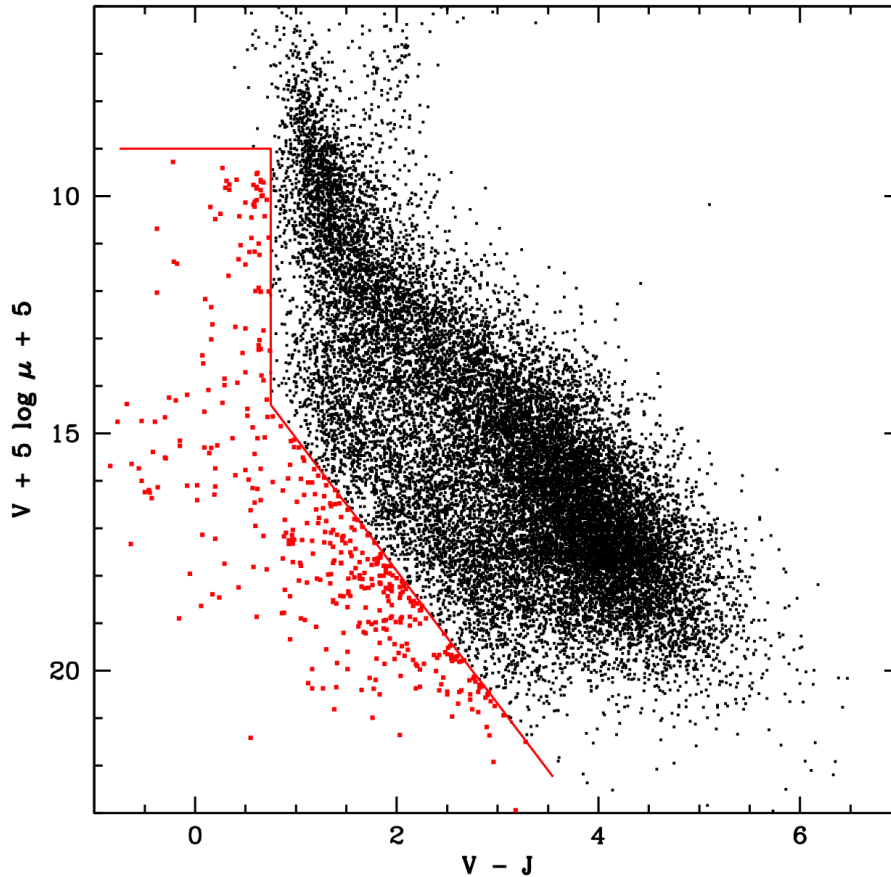


## **K2 Campaign 0 Target Proposal**

**Title:** Kepler K2 mission monitoring of nearby white dwarfs.

**Proposer:** Sebastien Lepine, Georgia State University.



**Scientific Justification:** White dwarfs constitute important targets for asteroseismology. The analysis of pulsation modes and frequencies can be used to constrain their internal properties (e.g. mass and chemical composition). In addition, smaller than Earth-size planets can be detected from white dwarf transits even with relatively low signal-to-noise. The transit occurrence is however low (due to alignment probability) which means that relatively large numbers of white dwarfs must be monitored for a single event to be detected.

The K2 campaign 0 field has been entirely searched for high proper motion stars as part of the SUPERBLINK proper motion survey (e.g. Lépine & Shara 2005, AJ 129, 1483; Lépine & Gaidos 2011, AJ 143, 138), which lists 21,443 stars with proper motion  $\mu > 40$  mas/yr within 12 degrees radius of the proposed field center. A reduced proper motion diagram (see figure) identifies a significant population of blue, low-luminosity objects which are most likely to be white dwarfs and hot subdwarfs (see e.g. Lépine, Bergeron, & Lanning 2011, AJ 141, 96; Limoges, Lépine, & Bergeron 2013, AJ 145, 136). A total of 429 candidate white dwarf and hot subdwarf are identified based on color and reduced proper motion cuts (red dots). This suggests that the final, 105 sq. deg. K2 field should contain about 100 white dwarf candidates.

These nearby white dwarfs are proposed as targets for the Kepler K2 mission. It is expected that every K2 field will contain of order 100 such objects. These could significantly increase the number of white dwarfs observed by Kepler, over the course of the K2 mission.