

Candidates to Hypervelocity Stars in the S-PLUS Survey

Hypervelocity stars (HVSs)

Stars with velocities that exceed the galactic escape velocity

Why study HVSs?

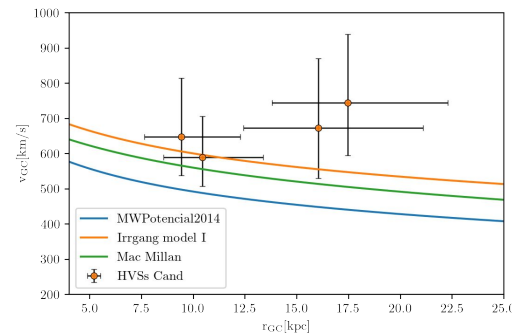
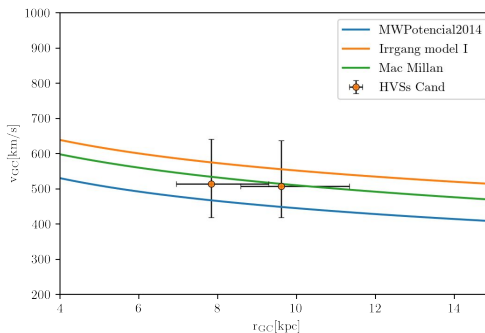
Since HVSs travel long distances in the Galaxy, HVSs can be used as additional tool to study the structure and dynamic of the Galaxy

HVSs candidates in S-PLUS

In order to find HVSs candidates we did a crossmatch between **Gaia EDR3** and **S-PLUS** and then we compare the galactocentric velocity with the escape velocity from a gravitational potential for the Galaxy

Results

We found six stars candidates to HVSs in S-PLUS. Of these, 2 have low relative error in parallax (left panel) and 4 have high relative error in parallax (right panel) and **therefore this sample needs to be taken carefully as candidates for HVS.**



Stars with velocities that partially exceed the escape velocity of the galaxy. The lines represent the escape velocity curves obtained from three models for the gravitational potential of the Galaxy

Next steps

- Search for HVSs candidates in the future data release of S-PLUS
- Photometric characterization
- Kinematics characterization (orbit integration)