The stellar population of NGC 5634.
A globular cluster in the Sagittarius dSph stream?

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ABSTRACT

We present the first $(V, V-I)$ Color – Magnitude Diagram (CMD) for the poorly studied globular cluster NGC 5634. The CMD shows a steep Red Giant Branch (RGB) and a predominantly blue Horizontal Branch (HB): both these characteristics suggest a low metal content for this cluster. From the position of the RGB in the CMD we estimate $[Fe/H] = -1.94 \pm 0.10$ and $E(B-V) = 0.06 \pm 0.01$. The CMD presented here reaches $V \simeq 23$, allowing us to obtain the first measure of the Main Sequence Turn-Off (TO) $V_{TO} = 21.22 \pm 0.15$ for this cluster. By combining this figure with the apparent luminosity of the *Zero Age HB* (ZAHB), $V_{ZAHB} = 17.90 \pm 0.10$ we obtain $\Delta V_{TO}^{HB} = 3.32 \pm 0.16$, a value which is fully compatible with that derived for the bulk of Galactic globulars. We also derive a true distance modulus of $(m-M)_0 = 17.17 \pm 0.12$ corresponding to a distance of ~ 27.2 kpc. Most interestingly, the cluster is shown to have position and radial velocity fully compatible with the orbit of the Sgr dwarf spheroidal (dSph) galaxy. The similarity between the stellar populations of the cluster and the Sgr globular Ter 8 and the metal poor population of the Sgr dSph, also suggest that NGC 5634 was a former member of this disrupting galaxy, torn off by the Galactic tidal field and now lost in the Sgr stream.

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