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Identification of very cool and ultracool dwarfs in ALHAMBRA and COSMOS fields using Virtual Observatory tools.

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Abstract

Through Virtual Observatory (VO) tools we have searched for new ultracool dwarfs in the ALHAMBRA[a] (Advance Large Homogeneous Area Medium Band Redshift Astronomical) and COSMOS[b] (Cosmological Evolution Survey) extragalactic surveys. The photometric coverage and the magnitude limits of these surveys make them valuable resources to look for this type of objects. We made quality cuts in each survey to select stellar objects with good photometric information. We took advantage of a Virtual Observatory tool like VOSA to, first, add new data to the Spectral Energy Distribution by querying in VO archives and services and, then, to obtain effective temperatures from the SED fitting to the BT-Settl collection of theoretical models. Keeping objects with Teff<3000K, we used color-color diagrams and measured proper motions to clean the sample from possible contaminants (e.g., extragalactic objects or giant stars), leaving a list of more than a hundred ultracool dwarf candidates. This study validates the procedure and the performance of VO tools to make similar searches in other deep, small-area extragalactic as well as shallower, large-area galactic surveys, and to be ready for the scientific exploitation of the Euclid[c] survey for which we will have priority access in the framework of our ESA ultracool Independent Legacy Project. (See poster).

[a] http://svo2.cab.inta-csic.es/vocats/alhambra/
[b] http://cosmos.astro.caltech.edu/page/photom3
[c] http://sci.esa.int/euclid/