DwarfArchives.org

A Homogeneous Database of M, L, and T Dwarfs

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With the ever growing number of L and T dwarfs, it is becoming increasingly difficult to keep track of all the publications presenting the data (photometry, spectra, finder charts, etc.) of these objects. Furthermore, given the different methods for discovery, there is no consistent way in which the data are presented from one publication to the next. No service exists that lists all known L and T dwarfs. SIMBAD is very useful for certain applications, but it only contains limited data for some L and T dwarfs.

We introduce DwarfArchives.org: a self-consistent, homogeneous archive of data for cool dwarf objects. This archive supersedes J. D. Kirkpatrick’s L Dwarf Archive at http://spider.ipac.caltech.edu/staff/davy/ARCHIVE and incorporates A. J. Burgasser’s T Dwarf pages at http://research.amnh.org/~adam/tdwarf. It will contain 2MASS All-Sky Point Source Catalog photometry and positions for 23 late-K dwarfs, 506 M dwarfs, 407 L dwarfs, 63 T dwarfs, 43 late-type giants, and 19 M subdwarfs (as of this writing). The archive will contain finder charts, and when available, spectral types (both optical and near-IR), optical spectra, links to discovery papers and other pertinent references. While the archive will be fully searchable, we will provide several subsets of objects, including those objects with measured parallaxes and those objects appropriate for spectral standards. Finally, we will discuss science projects that are possible with this uniform dataset.

Archive Features and Content

• The ONLY online database containing homogenous information about ALL known L and T dwarfs
• Fully searchable database
• Fully referenced data with links to ADS abstracts
• Spectroscopic standards for late-K, M, L, & T dwarfs

Current contents

- 419 objects
- 49 T dwarfs
- 367 L dwarfs
- 3 O dwarfs
- 65 objects with parallaxes

Content of the Final Archive

- All known L and T dwarfs
- 23 late-K dwarfs
- 506 M dwarfs
- 19 M subdwarfs
- 43 late-type giants

Features

- The ONLY online database containing homogenous information about ALL known L and T dwarfs.
- Fully searchable database.
- Fully referenced data with links to ADS abstracts.
- Spectroscopic standards for late-K, M, L, & T dwarfs.

Archival Features

• 572 objects with 2MASS photometry.
• 51 objects with measured parallaxes.
• 52 objects with optical and near-IR spectral data.

Example Search

In this example we walk through the steps for submitting a query to DwarfArchives.org. Clicking on the Search Engine link on the front page brings up the form displayed on the right.

The results table can either be HTML or plain text. The data can be sorted in ascending or descending order.

The future incorporation of optical and near-IR data will allow users the ability to create customized lists based on their own search criteria. An example of an archive search is presented below.

The front page also includes (though not seen in this snapshot) links to educational material about L and T dwarfs. This material includes information about the classification of L dwarf spectra, artwork depicting the relative sizes of stars, brown dwarfs, and planets, and near-IR images of some L and T dwarfs.

Other Uses and Future Features

- Possible science uses of the archive:
  - The position search feature combined with the mult.wavelength finder charts makes it simple to search for possible L or T dwarf companions to more massive stars.
  - The uniform set of photometry in this archive allows for statistically significant comparisons of photometric properties across the entire L and T spectral ranges.
- This archive is particularly useful for creating target lists for observing runs or for starting new observing projects (e.g., which objects need trigonometric parallaxes?)
- The future incorporation of optical and near-IR spectra will provide lists of spectral standards for researchers to observe during their spectroscopic programs.

- Future features:
  - Photometric and spectroscopic data for the 23 late-K dwarfs, 506 M dwarfs, 43 late-type giants, and 19 M subdwarfs.
  - A search engine analogous to the one shown here will be created for the K and M dwarfs.
  - Spectral data for all objects will be made available if such data exist. We will provide both the tabular data and a quick-look plot of the spectra.
  - A search-by-coordinate feature will be added to allow for searches around a specific RA/Dec.

The success of this archive depends immensely on support from the community. We appreciate all past, present, and future assistance that you may provide. We would specifically like to thank Dagny Looper for her work on the creation of the front page. This work makes use of the 2MASS archive and the ADS abstract service.

For searches in which the original name is returned, Users are strongly encouraged to cite discovery references when discussing specific objects in their publications.

The user can require that a measurement exists or does not exist by using these check boxes. This is useful for selecting only those objects for which a parallax is available, for example.