

科学数据管理和数据汇交培训

论文数据汇交及DOI服务

国家天文科学数据中心

报告人：王有芬 时间：2023-11-28

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01 政策背景

- 2018年2月13日 科技部 财政部 国科发基〔2018〕48号
关于印发《**国家科技资源共享服务平台管理办法**》的通知

- 2018年3月17日 国务院办公厅国办发〔2018〕17号
关于印发《**科学数据管理办法**》的通知

- 2019年2月19日

《中国科学院科学数据管理与开放共享办法(试行)》

- 《关于进一步弘扬科学家精神加强作风和学风建设的意见》中要求**论文等科研成果**发表后1个月内，要将所涉及的**实验记录、实验数据等原始数据资料**交所在单位统一管理、留存备查。

02 NADC论文数据贮藏库简介

- 论文数据贮藏库 (PaperData) 为科研人员提供免费的科研论文相关数据资料长期存储和开放共享服务。论文数据可包括科研论文中涉及的图表、数据、动画、模型、代码、软件等。
- <https://nadc.china-vo.org/>官网首页下拉至“最新论文数据”点击“更多”，浏览论文数据列表
- 获得天文领域重要期刊的认可推荐，如AAS Journal (美国天文学会期刊库)、RAA (天文与天体物理研究)、AJ、ApJ、ApJL、ApJS、RNAAS等

02 NADC论文数据贮藏库简介

• 论文数据列表

论文数据目录

S-type stars discovered in Medium-Resolution Spectra of LAMOST DR9
Jing Chen / A-Li Luo / Yin-Bi Li / Xiang-Lei Chen / Rui Wang / Shuo Li / Bing Du / Xiao-Xiao Ma

In this paper, we report on 606 S-type stars identified from Data Release 9 of the LAMOST medium-resolution spectroscopic (MRS) survey, and 539 of them were reported for the first time. The discovery of these stars is a three-step process, i.e., selecting with the ZrO band indices greater than 0.25, excluding non-S-type stars with the iterative Support Vector Machine method, and finally retaining stars with absolute bolometric magnitude larger than -7.1. The 606 stars are consistent with the distribution of known S-type stars in the color-magnitude diagram. We estimated the C/Os using the [C/Fe] and [O/Fe] provided by APOGEE and the MARCS model for S-type stars, respectively, and the results of the two methods show that C/Os of all stars are larger than 0.5. Both the locations on the color-magnitude diagram and C/Os further verify the nature of our S-type sample. Investigating the effect of TiO and atmospheric parameters on ZrO with the sample, we found that log g has a more significant impact on ZrO than Teff and [Fe/H], and both TiO and log g may negatively correlate with ZrO. According to the criterion of Tian et al. (2020), a total of 238 binary candidates were found by the zero-point-calibrated radial velocities from the officially released catalog of LAMOST MRS and the catalog of Zhang et al. (2021). A catalog of these 606 S-type stars is available from the following link <https://doi.org/10.12149/101097>.

Updated on 2022-04-12 15:30:00

An Empirical Template Library for FGK and Late-type A Stars Using LAMOST Observed Spectra
Bing Du / A-Li Luo / F. Zuo / Z.-R. Bai / R. Wang / Y.-H. Song / W. Hou / Y.-B. Li / J.-N. Zhang / Y.-X. Guo / J.-J. Chen / M.-X. Wang¹ / Y.-F. Wang / X. Kong / X.-F. Wu / X. Wang / Y. Wu / Y.-H. Hou / Y.-H. Zhao

We present an empirical stellar spectra library created using spectra from the Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST) DR9. This library represents a uniform data set ranging from 3750 through 8500Å in effective temperature (Teff), from -2.5 through +1.0 dex in metallicity ([Fe/H]), and from 0 to 5.0 dex in gravity (log g). The spectra in the library have resolutions R~1800, with well-calibrated fluxes and rest-framed wavelengths. Using a large number of red stars observed by LAMOST, we generated denser K-type templates to fill in data missing from current empirical spectral libraries, particularly the late K type. For K giants, we calibrated the spectroscopic surface gravities against the asteroseismic surface gravities. To verify the reliability of the parameters labeled for this library, we performed an internal cross-validation using a χ^2 minimization method to interpolate the parameters of each individual spectrum using the remaining spectra in the library. We obtained precisions of 41 K, 0.11 dex, and 0.05 dex for Teff, log g, and [Fe/H], respectively, which means the templates are labeled with correct stellar parameters. Through external comparisons, we confirmed that measurements of the stellar parameters through this library can achieve accuracies of approximately 125 K in Teff, 0.1 dex in [Fe/H] and 0.20 dex in log g without systematic offset. This empirical library is useful for stellar parameter measurements because it has large parameter coverage and full wavelength coverage from 3800 to 8900 Å.

Updated on 2022-02-23 15:30:00

Objective separation between CP1 and CP2 based on feature extraction with Machine Learning
Lun-Hua Shang / A-Li Luo / Liang Wang / Li Qin / Bing Du / Xu-Jiang He / Xiang-Qun Cui / Yong-Heng Zhao / Ri-Hong Zhu / Qi-Jun Zhi

In the eighth data release (DR8) of Large Sky Area Multi-Object Fibre Spectroscopic Telescope (LAMOST), more than 318,740 low-resolution stellar spectra with types from B to early F and signal-to-noise ratios > 50 were released. With this big volume of the early-type stars, we tried machine learning algorithms to search for class-one and class-two Chemical Peculiarities (CP1 and CP2) and detect spectral features to distinguish the two classes in low-resolution spectra. We selected the XGBoost algorithm after comparing the classification efficiency of three machine-learning ensemble algorithms. Using XGBoost followed by the visual investigation, we presented a catalogue of 20,694 sources, including 17,986 CP1 and 2,708 CP2, in which 6,917 CP1 and 1,652 CP2 are newly discovered. We also listed the spectral features for separating CP1 from CP2 discovered through XGBoost. For all entries of the catalog, stellar parameters (including effective temperature (Teff), surface gravity (log g), and metallicity [Fe/H]), the spatial distribution in galactic coordinates, and the colour-magnitude were provided. The Teff for CP1 distributes from -6,000 to -8,500K, while for CP2 from -7,000 to -13,700K. The log g of CP1 ranges from 2.8 to 4.8dex peaking at 4.5dex, and of CP2 from 2.0 to 5.0 dex peaking at 3.6 dex, respectively. The [Fe/H] of CP1 and CP2 are from -1.4 to 0.4 dex, and the [Fe/H] of CP1 are averagely higher than that of CP2. Almost all targets in our sample locate around the galactic plane.

Updated on 2022-02-23 15:30:00

点击“查看详情”，链接至元数据详情页

Identification of White Dwarfs from Gaia EDR3 via Spectra from LAMOST DR7
Kong, Xiao ; Luo, A.-Li

We cross-matched 1.3 million white dwarf (WD) candidates from Gaia EDR3 with spectral data from LAMOST DR7 within 3'. Applying machine learning described in our previous work, we spectroscopically identified 61 190 WD objects after visual inspection, among which 1 496 targets were firstly confirmed. 32 detailed classes were adopted for them, including but not limited to DAB and DB+M. We estimated the atmospheric parameters for the DA and DB type WD using Levenberg-Marquardt least-squares algorithm (LM). Finally, a catalog of WD spectra from LAMOST was provided online.

Files

LAMOST_DR7_WD.fits 1MB

Paper Information

Paper Title: Identification of White Dwarfs from Gaia EDR3 via Spectra from LAMOST DR7
Publication: Research Notes of the American Astronomical Society
Bibcode: 2021RNAAS...5..249K
DOI: 10.3847/2515-5172/ac3417

Identifier

Publication date: 2021-10-12 13:30:00
Update date: 2021-10-12 13:30:00
DOI: 10.12149/101076
VO Identifier: vo://China-VO/paperdata/101076

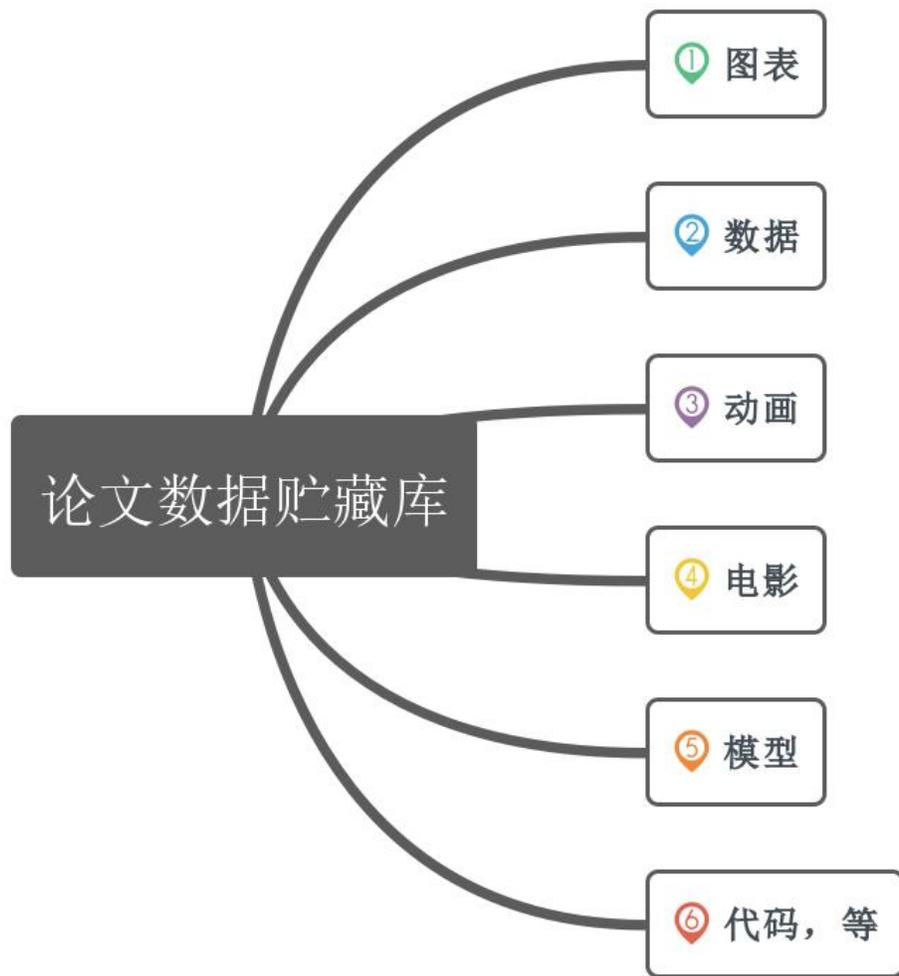
Versions

1.0 (current)
10.12149/101076 2021-10-12 13:30:00

Main
This DOI represents all versions, and will always resolve to the latest one.
10.12149/101075 2021-10-12 13:30:00

[返回列表](#)

02 NADC论文数据贮藏库简介 论文数据内容



提供一个永久的网络访问地址、保证地址的长期有效与数据安全、产权仍归论文作者所有

获得美国天文学会期刊 (AAS Journal) 和《天文与天体物理研究》(RAA) 等期刊的认可

- **论文数据存储**: 审稿阶段即可上传、存储
- **DOI申请**: 论文接受后
- **成功申请DOI后**: 将DOI写在论文中

(R.A., decl.), S/N of the spectra (S/N of blue and red arms), effective temperature (T_{eff}), surface gravity ($\log g$), metallicity [Fe/H], macroturbulence, microturbulence, elemental abundance ([X/Fe]), their errors and quality flags, and the total quality flag reported. A description of the columns of the catalog is shown in Table 1, and the full catalog can be accessed at DOI:[10.12149/101242](https://doi.org/10.12149/101242).

02 NADC论文数据贮藏库简介 使用场景

审稿中论文尚未接受的论文数据，可将导航栏的网页url分享给审稿人，如：
<https://nadc.china-vo.org/res/r101100/>

已有接收函成功申请DOI的论文数据，可将论文数据的DOI分享给编辑或其他使用数据的用户，如：10.12149/101108

复制url

The screenshot shows a web browser with the URL <https://nadc.china-vo.org/res/r101100/> highlighted in a red box. The page content includes a title 'Ultracool Dwarfs data sets', a description of 734 late-type M dwarfs, and a 'Files' section with a table of data files. A red box highlights the download icon for the first file.

File Name	Size	Action
0bcd6686f5144337873d7ac373670252		↓
167e63dc4945405f8c9a4c89d4648385.txt	8.70 kB	↓
3c586e1618694180aba562d0252af35a.csv	44.58 kB	↓
69358c12581547a5b30c3af4e5729a07.csv	91.09 kB	↓
725c27d6562b4eb7be43fa99a9aa1a46.csv	68.63 kB	↓
9bebc9fa158641779938856e399e0b58.csv	91.09 kB	↓

下载数据

复制DOI

The screenshot shows a web browser with the URL <https://nadc.china-vo.org/res/r101108/> in the address bar. The page content includes a title 'ultracool data sets using LAMOST DR7', a description of 734 late-type M dwarfs, and a 'Files' section with a table of data files. A red box highlights the DOI '10.12149/101108' in the 'Identifier' section and the download icons for the files in the 'Files' section.

File Name	Size	Action
aa_table1.csv	91.09 kB	↓
aa_table2.csv	44.58 kB	↓
aa_table3.csv	68.63 kB	↓

下载数据

03 系统具体操作访问

- 访问方法

打开天文科学数据中心官网
<https://nadc.china-vo.org/>

在“专题服务”

点击“论文数据贮藏库”

The screenshot shows the NADC website interface. At the top, the URL <https://nadc.china-vo.org/> is highlighted in a red box. The main navigation bar includes 'NADC 国家天文科学数据中心' and '国家科技资源共享服务平台'. The '专题服务' (Special Services) dropdown menu is open, with '论文数据贮藏库' (Paper Data Repository) highlighted in a red box. Below the navigation, there are three main content columns: '新闻动态' (News), '最新数据发布' (Latest Data Release), and '精选数据资源' (Selected Data Resources). The '资源与服务' (Resources and Services) section at the bottom features several icons, including '论文贮藏库' (Paper Repository), which is highlighted in a light blue box. The '经典服务案例' (Classic Service Cases) section at the bottom includes articles about the Gaocheng Telescope and the FAST radio telescope.

03 系统具体操作访问

https://nadc.china-vo.org/article/20200519170135



申请观测

科学数据

专题服务

云资源

公众频道

点击 “click here”

PaperData Repository

Powered by China-VO

China-VO Paper Data Repository provides long-term storage and open access service for your paper data, which includes but not limited tables, figures, pictures, movies, source codes, models, software packages mentioned in your scientific papers. A permanent but user specified URL will be provided for each item. Furthermore, copyrights of these properties are still owned by yourself.

Recommended by AAS Journals (AJ/ApJ/ApJL/ApJS/MNRAS) and Research in Astronomy and Astrophysics (RAA).

Getting started with China-VO Paper Data, please [click here](#).



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China-VO PaperData allow user to apply DOI for their data used in the paper through the platform.

A China-VO PaperData DOI (<https://doi.org/10.12149/100XXX>) will be issued within 2 working days after



AAS Official Recommendation

AAS has officially recommended China-VO PaperData in their tutorials. For your convenience, please include the fact that a PaperData DOI will be issued for these results in your submission notes to AAS journal.



Help Document

How to start?
How to get a DOI for your data?
Check the document before you start.

03 系统具体操作 登陆



NADC通行证 (NADC通行证可使用邮箱进行注册)

用户登录

账户
yfwang@bao.ac.cn

密码
.....

登录 忘记密码 帮助

还有其他四种方式登录



03 系统具体操作 登陆

中国科技云通行证

登录 您正在登录 NADC Passport

账号

密码

请输入中国科技云通行证密码

[登录](#) [忘记密码?](#)

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[立即注册](#)

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中国科技云通行证是基于中国科技网的统一账号系统，可以用于登录中国科技网各类科研应用服务，以及今后将逐步扩展的更多应用服务。

- 2016年5月，中国科技网通行证升级为 中国科技云通行证。
- 2013年4月，原 Duckling通行证升级为 中国科技网通行证。

中国科技云 (以及中科院邮箱)

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事业单位 IPv6 validated by ipv6-test.com

03 系统具体操作 登陆

使用微信扫一扫登录

「国家天文科学...」



微信扫码登录



中国科技资源共享网应用登录授权页面
使用共享网账号登录——**第三方应用**

请输入共享网用户名

请输入密码

登录并授权

中国科技资源共享网等第三方认证系统登录

/oauth2/authorize?response_type=code&client_id=45767&redirect_uri=https%3A%2F%2Foauth.china-vo.org%2Fihp%2Fsignin&state=UKP6...
English 登录 注册

您正在使用高能所统一认证系统登录 国家天文科学数据中心，一键通行更轻松

账号

密码

请输入高能所统一认证系统密码

登录

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IHEP e-mail 用户不需要注册，使用邮箱的账号密码可直接登录。

其他用户首次使用需先注册

HELP :

Email:helpdesk@ihep.ac.cn

Tel:010-88236855

高能所统一认证

03 系统具体操作 创建数据集、提交信息

The screenshot shows the NADC PaperData interface. At the top, there is a navigation bar with the NADC logo and the text 'National Astronomical Data Center 国家天文科学数据中心'. Below this, there are several menu items: '中文首页', '科学数据', '专题服务', '云资源', and '公众频道'. The main content area is titled 'PaperData' and features a prominent blue button labeled '创建数据集' (Create Dataset), which is circled in red. Below this, there is a section titled '数据集信息' (Dataset Information) containing several input fields: '论文标题*' (Paper Title*), '论文摘要*' (Paper Abstract*), '发表期刊*' (Journal Name*), '数据集名称 (英文)*' (Dataset Name (English)*), '数据集名称 (中文)*' (Dataset Name (Chinese)*), '数据集简介 (英文)*' (Dataset Description (English)*), and '数据集简介 (中文)*' (Dataset Description (Chinese)*). At the bottom of the form, there are two buttons: '提交' (Submit) and '返回' (Return), with the '提交' button circled in red.

点击“创建数据集”按钮

填写论文的标题、摘要、（拟）发表的期刊名称、以及数据集的英文名称、中文名称、英文介绍、中文介绍。点击提交。

03 系统具体操作 上传数据

PaperData

数据集编号	数据集名称	版本	状态
101099	Ultracool Dwarfs data sets	Main last updated on 2022-04-28 13:23:24	
101100	Ultracool Dwarfs data sets	Version 1.0 last updated on 2022-04-28 13:38:29	

点击“上传、管理数据”

大于5GB的文件，使用rsync命令，点 Get rsync account

小文件点击“选择文件”和“上传”

Data Upload

(1) 通过网页直接上传

选择文件

(2) 如数据集较大,可使用rsync上传

Get rsync account

username: yfwang@bao.ac.cn
secrets: bJ5xgfluas24dGu
使用示例: rsync --port 3000 本地文件路径 'username@trans.china-vo.org:101100/' 根据提示输入密码即可。

账户名、命令行

Ultracool Dwarfs data sets
已上传文件 (11 文件 7.16 MB)

File List

filename	file size	uploaded time	uploader	actions
lithium_Halpha_check_2206_taurus_field.ps	6.75 MB	2022-06-16 09:48:03	王有芬	Delete
167e63dc4945405f8c9a4c89d4648385.txt	8.70 kB	2022-05-19 05:42:53	王有芬	Delete
725c27d6562b4eb7be43fa99a9aa1a46.csv	68.63 kB	2022-05-19 05:42:03	王有芬	Delete

03

系统具体操作

预览数据链接

PaperData

数据集编号	数据集名称	版本	状态
101099	Ultracool Dwarfs data sets	Main last updated on 2022-04-28 13:23:24	
101100	Ultracool Dwarfs data sets	Version 1.0 last updated on 2022-04-28 13:38:29	

点击“预览”



DOI未申请之前，
页面无DOI信息

NADC National Astronomical Data Center
国家天文科学数据中心

申请观测 科学数据 专题服务 云资源 公众频道

This dataset has not been officially published, this page is only for preview

this is a test of the using

test name

this is a test of the using
of the using this is a test of the using this is a test of the using

Files

lithium_Halpha_check_2206.ps	40.92 MB	↓
aa_table1.csv	91.09 kB	↓
aa_table2.csv	44.58 kB	↓
aa_table3.csv	62.64 kB	↓
readme.txt	11.00 B	↓

Version 1.0 (current)

Back to PaperData Catalogue

可将页面
URL分享出
去

数据仍可正
常下载

03 系统具体操作 申请DOI 工作时效：2个工作日



点击
“申请
DOI”

数据集名称*
请输入数据集名称(英文)

数据集简介*
请输入数据集简介(英文)

关键字*
请输入数据集关键字(英文)

创建时间*
请输入数据集的生产时间

作者*
姓名* 单位* 邮件* 电话*
请输入数据集的作者姓名、单位、邮箱及电话。数据集发布后，用户遇到数据使用问题可能会通过此联系方式联系作者。
+ 添加作者

申请原因*
请输入为此数据集申请DOI的原因

论文标题*
请输入论文标题

论文摘要*
请输入论文的摘要

发表期刊*
请输入论文发表或投稿的期刊名称

论文bibcode
Bibcode e.g. 2015RAA...15.1095L
please provide the bibcode of the paper if available (bibcode is a 19 digit unique identifier for paper)

论文接收证明*
选择文件 未选择任何文件
请上传论文已被接收的证明(邮件通知、网站截图等)。仅允许pdf/jpg/png文件,文件大小不超过1MB

发表/接收版本全文*
选择文件 未选择任何文件
请上传已发表或接收的论文全文。仅允许pdf文件

返回 提交

关键词填写：3至8个关键词，每个关键词之间用分号隔开

“数据集名称”、
“数据集简介”、
“关键词”、“创建
时间”、“作者”、
“申请原因”、“论
文标题”、“论文摘
要”、“发表期刊”
等

注意数据集简介和论文摘要的不同，
数据集简介着重介绍数据的内容

03 系统具体操作 创建新版本

101107	ultracool data sets using LAMOST DR7	Main	DOI Application Approved	创建新版本
101108	ultracool data sets using LAMOST DR7	Version 1.0	DOI Application Approved	查看

点击“创建新版本”

101107	ultracool data sets using LAMOST DR7	Main	Published/Active DOI: 10.12149/101107	创建新版本
101108	ultracool data sets using LAMOST DR7	Version 1.0	Published/Active DOI: 10.12149/101108	查看
101148	this is a test of the using	Main	DOI Application Rejected	创建新版本 编辑
101149	this is a test of the using	Version 1.0	DOI Application Rejected	编辑 预览 上传/管理数据 申请DOI
101150	this is a test of the using 2nd edition test	Version 2.0	last updated on 2022-08-17 11:07:55	编辑 预览 上传/管理数据 申请DOI
101153	this is a test of the using	Version 3.0	last updated on 2022-09-07 20:11:57	编辑 预览 上传/管理数据 申请DOI

一些细节解读

申请新版本DOI的过程与v1一样，但是申请DOI的步骤请记得在数据集简介中填写新版本与旧版本数据的差别

请输入数据集名称(英文)

请输入数据集简介(英文)

关键字*

创建时间*

作者*

申请原因*



03 系统具体操作 元数据展示

如果有可能升级、修改数据，请把主版本DOI给编辑，如果需要引用特定版本数据，请引用特定子版本DOI。

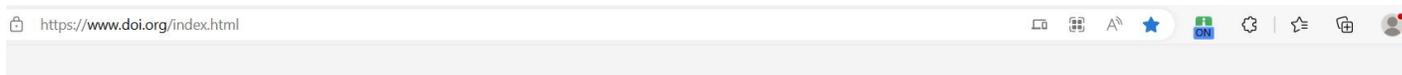
The screenshot shows a data record page with the following sections:

- Identifier:** DOI: 10.12149/101178, VO Identifier: VO://China-VO/paperdata/RAA/2022zhangshuhui/101178, Publication Date: 2022-12-13.
- Files:** Error Correction Factors of Observational Parameters.csv (297.48 MB).
- Paper Information:** Paper Title: Correction factors of the measurement errors of the LAMOST-LRS stellar parameters; Publication: Research in Astronomy and Astrophysics.
- Versions:** Version 2.0 (current) (10.12149/101178, 2022-12-13), Main (10.12149/101176), Version 1.0 (10.12149/101177, 2022-12-12).

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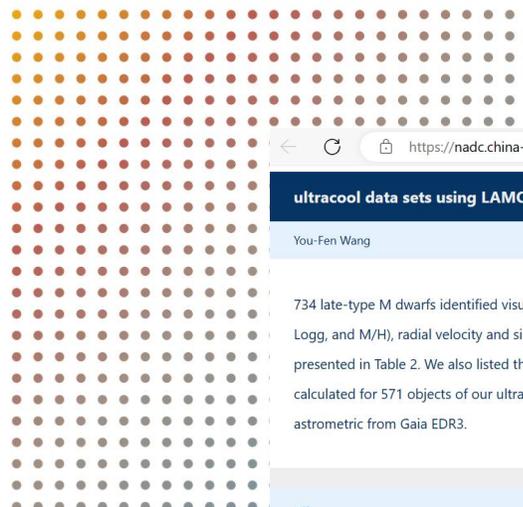


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ultracool data sets using LAMOST DR7

You-Fen Wang

734 late-type M dwarfs identified visually from LAMOST DR7 are presented in Table 1. The atmospheric parameters (Teff, Logg, and M/H), radial velocity and signal to noise in SDSS i and z band, and radial velocity from LAMOST DR7 are presented in Table 2. We also listed the flag of the lithium strength in Table 2. In Table 3, we list the kinematic parameters calculated for 571 objects of our ultracool dwarf sample with radial velocity from LAMOST DR7, and photometry and astrometric from Gaia EDR3.

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Ionized-gas Metallicity of the Strong [O III] λ 5007 Emission-line Compact Galaxies in the LAMOST Survey

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Liu, Siqi ; Luo, A.-Li ; Zhang, Wei ; Kong, Xiao ; Zhang, Yan-Xia ; Shen, Shi-Yin ; Zhao, Yong-Heng

This article reports a sample of 1830 strong [O III] λ 5007 emission-line compact galaxies discovered with the LAMOST spectroscopic survey and the photometric catalog of the Sloan Digital Sky Survey. We newly identify 402 spectra of 346 strong [O III] λ 5007 emission-line compact galaxies by finding compact isolated point sources. Combined with the samples in our previous work, this returns a sample of 1830 unique strong [O III] λ 5007 emission-line compact galaxies with 2033 spectra of $z \leq 0.53$. For the sources with 2σ [O III] λ 4363 detections, we calculate the gas-phase metallicity with the direct- T_e method, and verify that the strong-line metallicity diagnostics calibrated with the direct- T_e method also applies to this sample. The strong [O III] λ 5007 emission-line compact galaxies fall below several T_e -calibrated mass-metallicity relations. The N/O measurements of the strong [O III] λ 5007 emission-line compact galaxies mainly locate at a plateau at low metallicity, indicating the product of primary nucleosynthesis. The Ne3O2 and O32 relation follows a tight linear relation with no redshift evolution. The Ne3O2 anticorrelates with the stellar mass, and at fixed stellar mass the Ne3O2 increases with the redshift. Eight sources with asymmetric [O III] λ 5007 emission-line profiles have been identified, however with no [O III] λ 4363 detection, which proves the rich metal content and complex ionized-gas kinematics within the galaxies. Higher-resolution spectroscopy will be necessary to identify the ionized-gas components in detail.

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strong [O iii] λ 5007 emission-line compact galaxies in LAMOST survey

Siqi Liu

This article reports a sample of 1830 strong [O iii] λ 5007 emission-line compact galaxies discovered with the LAMOST spectroscopic survey and the photometric catalog of SDSS. We newly identify 402 spectra of 346 strong [O iii] λ 5007 emission-line compact galaxies by finding compact isolated point sources. Combined with the samples in our previous work (Liu et al. 2022), this returns a sample of 1830 unique strong [O iii] λ 5007 emission-line compact galaxies with 2033 spectra of $z \leq 0.53$. For the sources with 2σ [O iii] λ 4363 detections, we calculate the gas-phase metallicity with the direct- T_e method, and verify that the strong-line metallicity diagnostics calibrated with the direct- T_e method also applies to this sample. The strong [O iii] λ 5007 emission-line compact galaxies fall below several T_e -calibrated mass-metallicity relations. The N/O measurements of the strong [O iii] λ 5007 emission-line compact galaxies mainly locate at a plateau at low metallicity, indicating the product of primary nucleosynthesis. The Ne3O2 and O32 relation follows a tight linear relation with no redshift evolution. The Ne3O2 anti-correlates with the stellar mass, and at fixed stellar mass the Ne3O2 increase with the redshift. Eight sources with asymmetric [O iii] λ 5007 emission-line profiles have been identified, however with no [O iii] λ 4363 detection, which proves the rich metal content and complex ionized gas kinematics within the galaxies. Higher-resolution spectroscopy will be necessary to identify the ionized gas components in detail.

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