LAMOST & China-VO Data System

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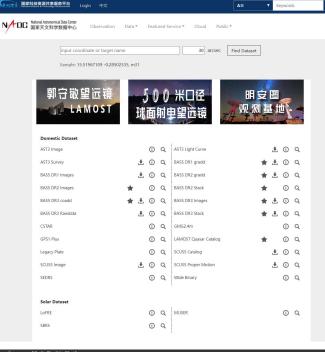
Data Websites

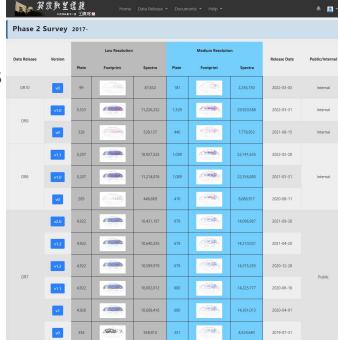
υ NADC

- υ Chinese Domestic Datasets
- v https://nadc.china-vo.org/data/
- υ CORE TRUST SEAL verified in 2018

υ LAMOST

- υ special for LAMOST
- v serve DR1 ~ DR10 and their sub versions
- v http://www.lamost.org/data/





<image>

Large Sky Area Multi-Object Fiber Spectroscopic Telescope

Medium Resolution Search

FTP Download

Total Spectra: 11,226,252

Line indices of A Type Stars:654,940

Galaxy Population Synthesis Catalog:23,770

1.587.141 13.856 6.264

050: 76 167

Star: 10.907.516

WD Star Catalog:16.382

AEGK Stellar Parameters: 7 060 436

Qso Emission line Feature Catalog:17.82

M Giants, Dw

417 753

934 247

87 107

67.845

65,397

79,965

DATA RELEASE 9 v1.0

2011.10.24-2021.06.30

Low Resolution Search

Catalog Download

LAMOST DR9 TOTAL

M Giants Dwarfs and Subdwarfs: 832,755

Observed Plates: 5.533

Galaxy: 242.56

CV Star Catalog:489

Low Resolution

Pilot survey

First year survey

(20120928-2013060)

404

812

1.607.261

V0

Datasets

- v Antarctic Survey Telescopes
- v Beijing-Arizona Sky Survey
- υ Chinese Small Telescope ARray Catalog
- υ Large Sky Area Multi-Object Fiber Spectroscopic Telescope --- LAMOST
 - υ **biggest spectrum dataset in the world**, >11m low-resolution, >8m med-resolution

China

- υ Single-exposure data for LAMOST DR5
- υ Legacy Plates Thousands of historical films
- υ The South Galactic Cap u-band Sky Survey
- υ Low Frequency Radio spectrum Explorer
- v Mingantu Ultrawide Spectral Radioheliograph
- υ Solar Broad Band Spectrometer

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Data Types

- υ Catalogue
- υ Image
- υ Spectrum
- υ Light Curve
- υ $\,$ some other solar binary format $\,$
- υ other



Services

- v flexible mechanism to support instruments' data publishing
- υ User System and Access Control
 - υ Single Sign in/out
- υ Query Forms
- υ Online SQL not TAP
- υ Interactive spectrum visulization
- υ Cross-match
- υ CMS for documents online editing
- υ IVOA Services
 - υ Web SAMP
 - υ Cone Search
 - υ SSAP
 - υ $\,$ HiPS Images & Catalogues $\,$
 - υ SIA support image search, without image cutout



VORegistry

- υ China-VO VORegistry upgrading...
 - υ https://registry.china-vo.org/
- υ based on China-VO metadata system
 - $\upsilon~$ collecting data and assign VO-ID, DOI, CSTR $\ldots~$

China

- υ not all services registed yet
- υ btw, thanks for the registry scan services

adapt more VO specifications?

China-VD

- υ Of Course!
- υ full SIA
- υ full VORegistry
- υ SSO
- υ TAP
- υ VOSpace
- υ MOC
- υ Datalink
- υ ...

Difficulties

 υ arbitrary field query on billion rows catalog

China

- υ 10 billion catalog is coming
- υ ~ testing postgres data sharding extension
- υ Huge Image Cutout
 - υ ~30TB images
- υ TAP implementation
 - υ need java based library
 - υ $\,$ considering switch to Python $\,$
- υ how to download millions small files
 - υ no good solution
 - υ try don't download --> work on online science platform

if start again ...

- υ distributed structure
- v high Availability/Reliability
- v to support more dataset by configuration, not just add some new code
- υ more api & better documents





THANKS Q&A

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