## LAMOST & China-VO Data System

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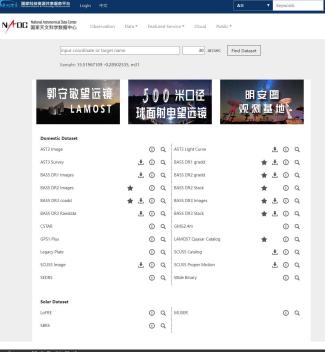
#### **Data Websites**

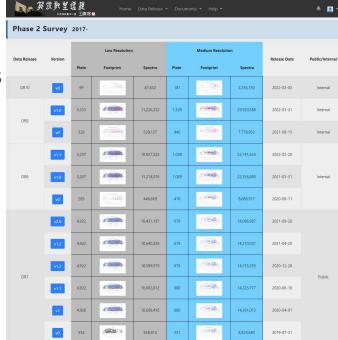
#### υ NADC

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

#### υ LAMOST

- $\upsilon$  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

- $\upsilon$  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

D

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#### Data Types

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



#### **Services**

- v flexible mechanism to support instruments' data publishing
- υ User System and Access Control
  - $\upsilon$  Single Sign in/out
- υ Query Forms
- $\upsilon$  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
  - $\upsilon$   $\,$  HiPS Images & Catalogues  $\,$
  - υ SIA support image search, without image cutout



## VORegistry

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

China

- $\upsilon$  not all services registed yet
- $\upsilon$  btw, thanks for the registry scan services

### adapt more VO specifications?

China-VD

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

#### Difficulties

 $\upsilon$  arbitrary field query on billion rows catalog

China

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

#### if start again ...

- $\upsilon$  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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