



中山大學
SUN YAT-SEN UNIVERSITY

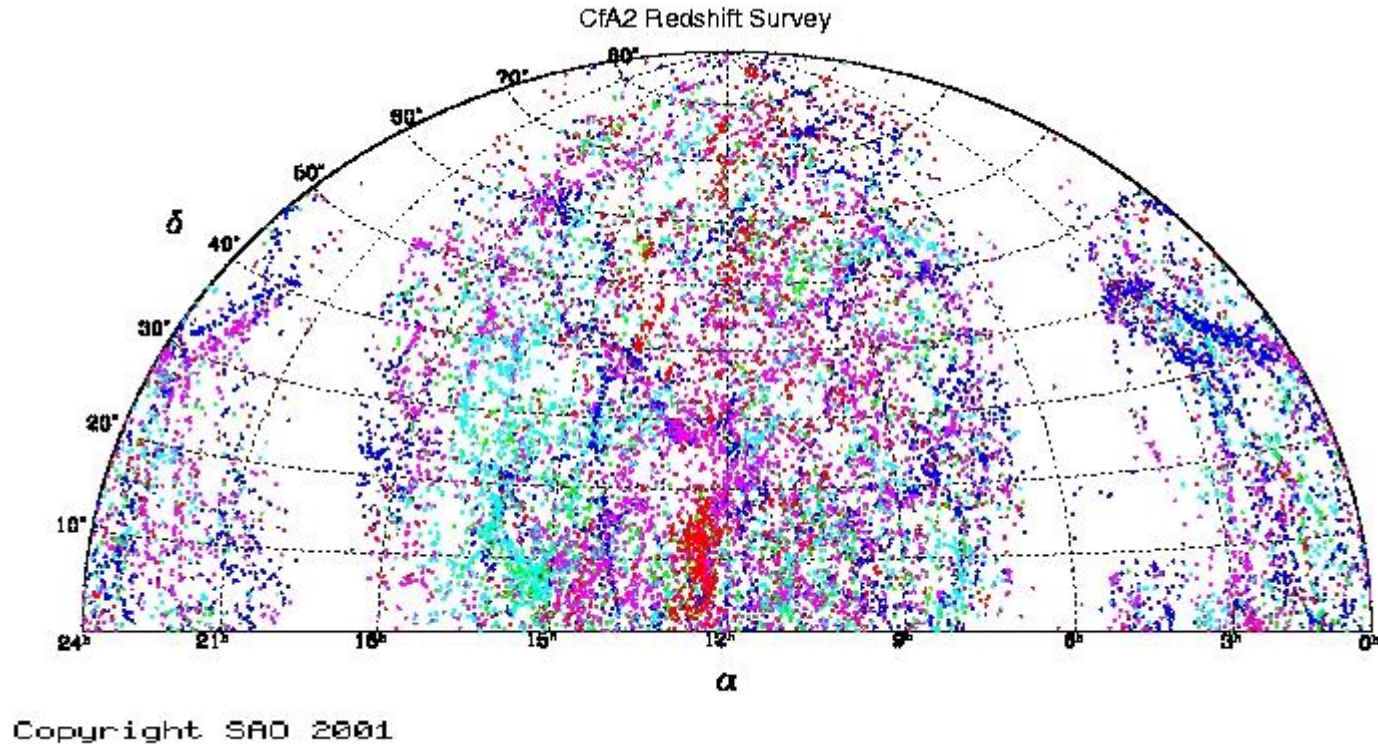
Mapping the Universe

譚子立

红移(Red-shift survey)

- 大部分星系的光谱都在往波长增大的方向移动
- 多普勒效应，宇宙膨胀
- 红移速度和距离满足： $Distance = \frac{velocity}{Hubble's\ Constant} = \frac{V}{H_0}$
- 通过测量光谱，可以宇宙中其他星系和我们之间的距离，绘制宇宙宏图

The CfA redshift survey



探测了约8000个红移星系
将可探测的宇宙推进到了 $z \simeq 0.03$

The Sloan Digital Sky Survey



- 使用四色CCD光度法
- 已经发展到第五代
- 对半个北半球天空进行测量
(π in the sky)

The screenshot shows the SDSS website with the following content:

- SDSS** logo and navigation links: Data, Surveys, Instruments, Collaboration, Results, Education, The Future, Contact.
- Text: "This is Data Release 17. See our full list of [data releases](#)."
- Search bar: "Search www.sdss.org"
- Survey list: APOGEE-1, APOGEE-2, BOSS, eBOSS, MaNGA, MARVELS, SEGUE.
- Sloan Digital Sky Surveys** section:
 - Table of Contents** link.
 - SDSS-V: Current Surveys** section:
 - Text: "The SDSS-V Pioneering Panoptic Spectroscopy program started observing in October 2020, and consists of three surveys, known in SDSS-V terminology as [mapper programs](#)."
 - SDSS-V** logo.
 - ☆ **Milky Way Mapper** is a multi-object spectroscopic survey to obtain near-infrared and/or optical spectra of more than 4 million stars throughout the Milky Way and Local Group.
 - ☆ **Local Volume Mapper** is an optical, integral-field spectroscopic survey that will target the Milky Way, Small and Large Magellanic Clouds, and other Local Volume galaxies.
 - ☆ **Black Hole Mapper** is a multi-object spectroscopic survey that emphasizes optical spectra (often also with multiple epochs of spectroscopy) for more than 300,000 quasars.
 - Text: "More information on SDSS-V and its mappers, including [how to join SDSS-V](#), is available on the [sdss5.org](#) website."
 - SDSS-IV: Surveys (2014-2020)** section:
 - Text: "After nearly a decade of design and construction, the Sloan Digital Sky Survey saw first light on its [giant mosaic camera](#) in 1998 and entered routine operations in 2000. While the [collaboration](#) and [scope of the SDSS](#) have changed over the years, many of its key principles have stayed fixed: the use of highly efficient [instruments](#) and [software](#) to enable surveys of unprecedented scientific reach, a commitment to creating high quality [public datasets](#), and investigations that draw on the full range of expertise in a large international collaboration. The generous support of the [Alfred P. Sloan Foundation](#) has been crucial in all phases of the SDSS, alongside support from the [participating institutions](#) and national funding agencies in the U.S. and other countries."
 - Text: "The latest generation of the SDSS (SDSS-IV, 2014-2020) is extending precision cosmological measurements to a critical early phase of cosmic history (eBOSS),"
 - Image: A composite image showing two views of the sky, labeled "Mapper 11" and "NRC 101", with a grid overlay.



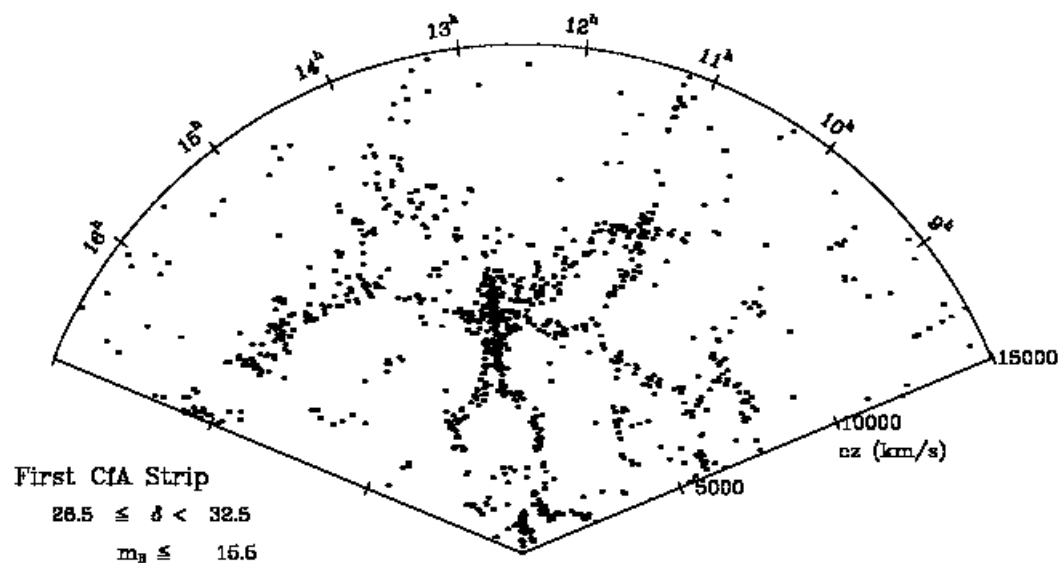
其他的计划

- 红外天文卫星探测(IRAS)
- 对目录中的部分星系进行稀疏的探测(e.g. APM catalogue)
- 针对一小块天空的深度射束测量(pencil-beam)

气泡与长城

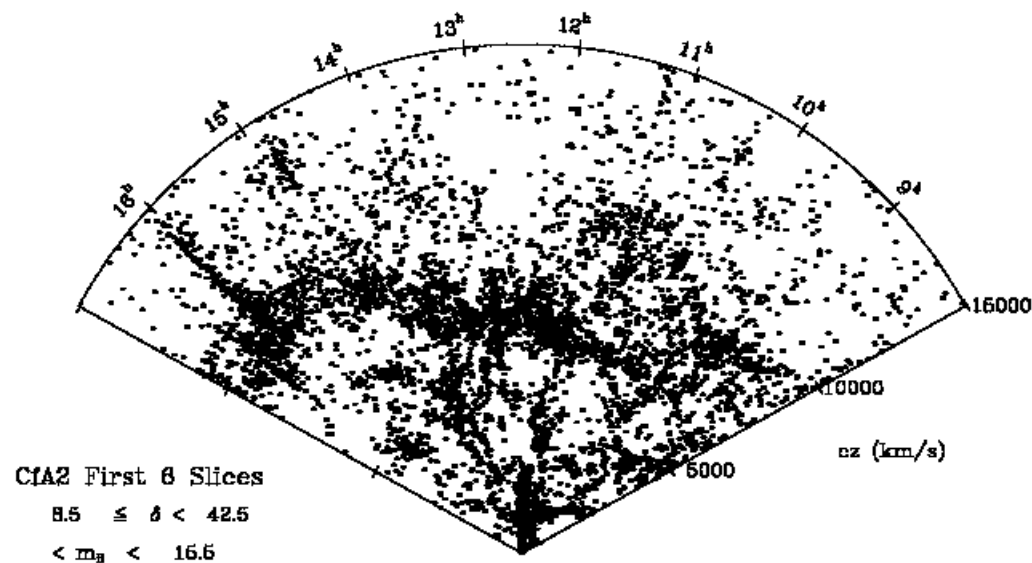


从CfA中观察到了两种结构



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谢谢大家