Kavli Institute
for Cosmological Physics
at The University of Chicago

ADLER
PLANETARIUM

Department of
ASTRONOMY & ASTROPHYSICS
THE UNIVERSITY OF CHICAGO

Astronomy Conversations:

A Growing Partnership Between the University of Chicago & the Adler Planetarium & Astronomy Museum

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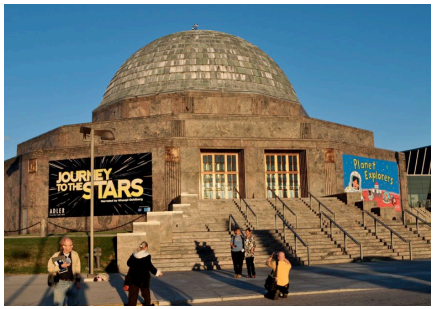


Larry Ciupik - Astronomer
& Mark SubbaRao - Director SVL
Adler Planetarium & Astronomy Museum

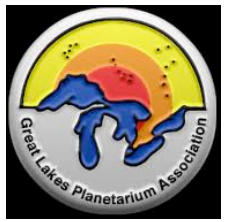
Astronomy Conversations: A Growing Partnership Between the Kavli Institute for Cosmological Physics (KIPC) & the Adler Planetarium & Astronomy Museum

Abstract: *This program brings research scientists and their data into the planetarium, a format and setting where the public can share in the excitement of discovery.*

Learn how Chicago astronomy researchers and planetarians are using authentic astrophysical data and multimedia technology (e.g., 3D displays and ultra high-resolution tile displays) at the Adler Planetarium & Astronomy Museum's Space Visualization Lab (SVL) to interactively explore forefront research with small groups, and how this might be extended to your home institution. *Astronomy Conversations* are an attempt to make current astrophysical and cosmological research accessible and exciting. This is done by bringing researchers to a location where the public can be found, the Adler Planetarium; and by using visual tools to make complex and evolving research something that can be easily experienced by *all* museum visitors. An important aspect of *Astronomy Conversations* is an ongoing collaboration between the Kavli Institute for Cosmological Physics (KICP) and the Adler. Hallmarks of this program include the use of *real data*, providing virtual visits to remote observatory sites (e.g., the South Pole), involving active researchers in dialogues with the public, and a genuine collaboration that builds on the strengths of each partner.

Program Goals:

- To use viz tools to make science accessible to the public
- To present current research to the public @ Adler & beyond
- To cultivate collaborative partnerships between informal educators and scientists
- To improve researcher communications skills
- To expand the reach of these efforts via other media (e.g., digital domes, undergraduate instruction and web 2.0 applications)



Great Lakes Planetarium Association Meeting 2010

The Presentation

- Partners
- Project
- People & Projects (Science)
- Process
- Progress
- Partake?

P

Partners

Adler Planetarium & Astronomy Museum

- 450,000 Visitors Annually

THE UNIVERSITY OF CHICAGO

- proximate
- genuine collaboration
- both gain

Kavli Institute for Cosmological Physics

- NSF Physics Frontier Center
- endowed inst.

Project: Astronomy Conversations

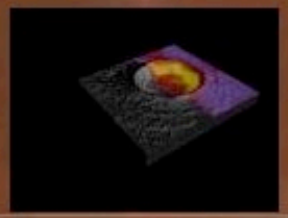
- Make Current Science Accessible to the Public
- Public Interaction with Real Scientists
- Mechanism = Visual Exploration + Dialog
  - Adler Space Visualization Lab (SVL)
- Focus Narrative - Journey of Discovery
  - Especially Younger Researchers Telling Their Stories
    - Improve Communication & Team-working Skills
    - Approachable Role Models
  - SVL Open to the Public 2-3PM Mon-Sat
  - KICP Researchers = regular presenters

The Place

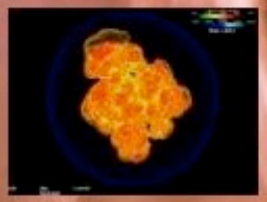
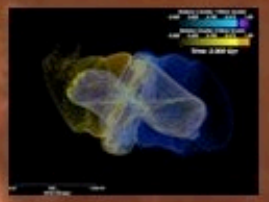

SPACE VISUALIZATION LABORATORY
SPACE
VISUALIZATION
LABORATORY

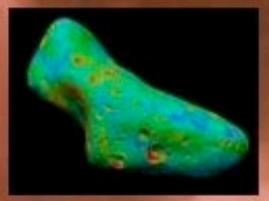
SPACE VISUALIZATION LABORATORY

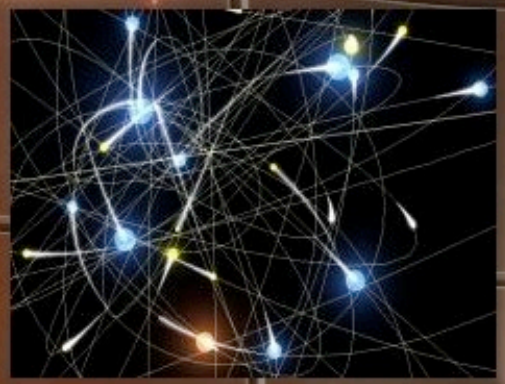






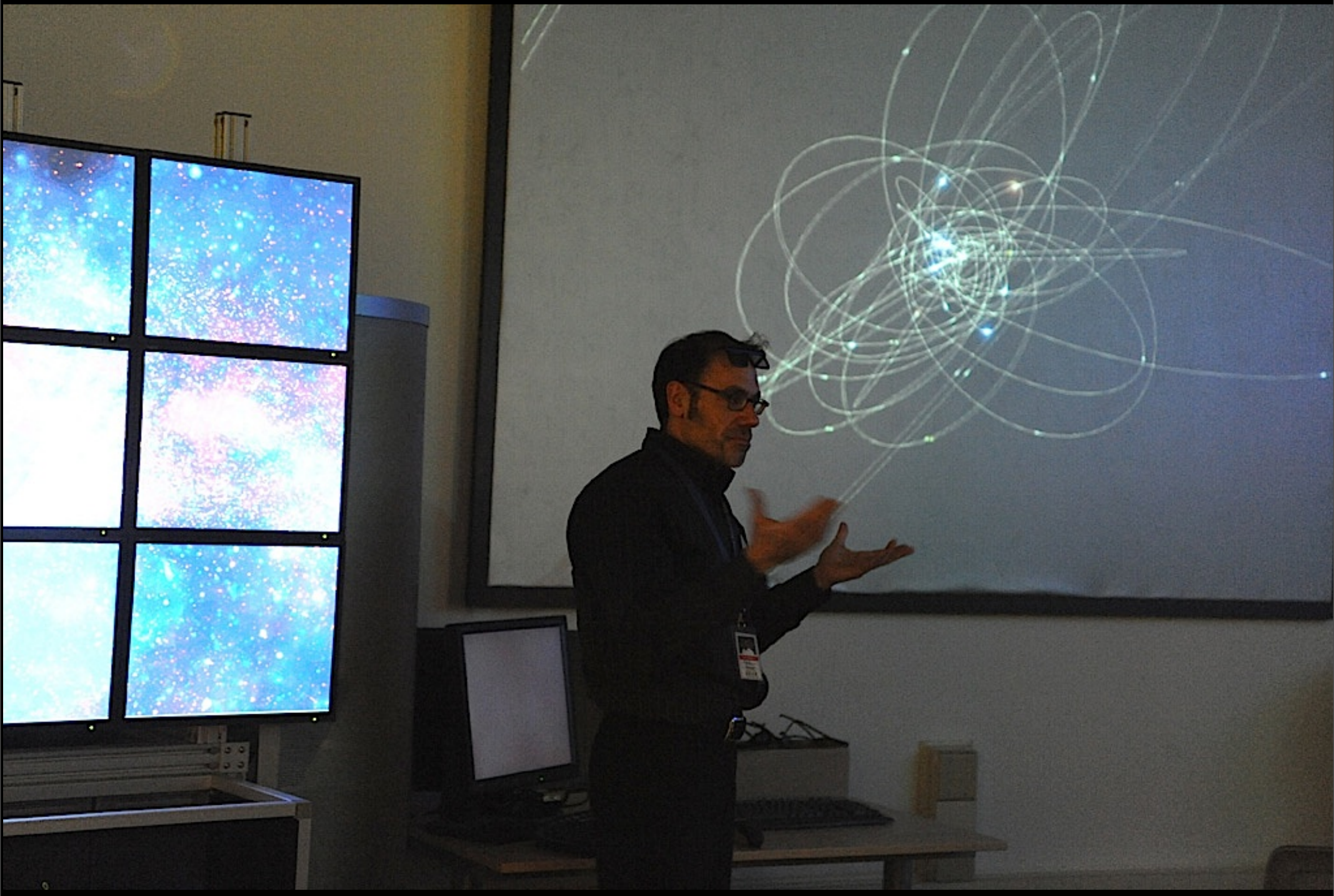



Stars around the Black Hole Partiview

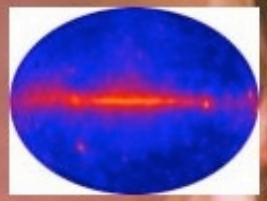
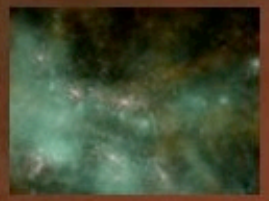
Stars around the Galactic Black Hole.
Data courtesy of Andrea Ghez, Jessica Lu, UCLA
Visualization by Mark SubbaRao and Dinoj Surendran.
[ESC to Exit]


SPACE VISUALIZATION

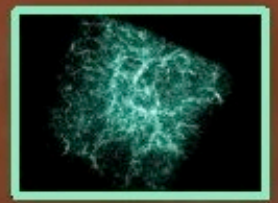
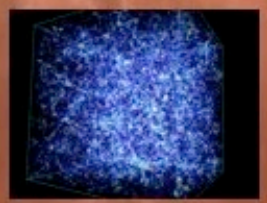


SPACE VISUALIZATION LABORATORY





Large Scale Structure Simulation Partiview

Andrey Kravstov, KICP.
[ESC to Exit]


SPACE VISUALIZATION LABORATORY
SPACE VISUALIZATION LABORATORY
Open 2-3pm
Monday through Saturday

People & Projects: Scientists & Science

Kavli Institute
for Cosmological Physics
AT THE UNIVERSITY OF CHICAGO

KICP Signature Programs

Space Explorers → Engaging underrepresented K-12 minorities in STEM

Cosmology Short Courses → Teaching teachers cosmology & providing tools to disseminate

Museum Partnerships → Increasing public interest & excitement

THE KAVLI FOUNDATION

Kavli Institute
for Cosmological Physics
AT THE UNIVERSITY OF CHICAGO

Museum Partnerships

- multi-faceted collaborations with museums
- goals
  - present current science & share the excitement of discovery with the public
  - improve researcher communications skills
- focus on visualization, e-media, & real data

ADLER PLANETARIUM

American Museum of Natural History

Astro SCIENCE BULLETINS

Microsoft Research WorldWide Telescope

Google Sky

California Academy of Sciences

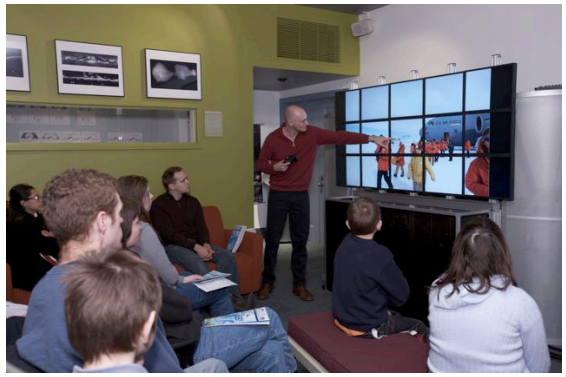
exploratorium® the museum of science, art and human perception

Sky-Skan

Great Lakes Planetarium Association

researcher motivation - why?

- their science is cool
  - cool toys, concepts, data
- altruism
  - inspire next generation, pay back to society
- selfishness
  - inspire next generation, build CV, low risk training, out of box & fun
- nsf merit review criteria - #2 broader impacts



What are the broader impacts of the proposed activity?

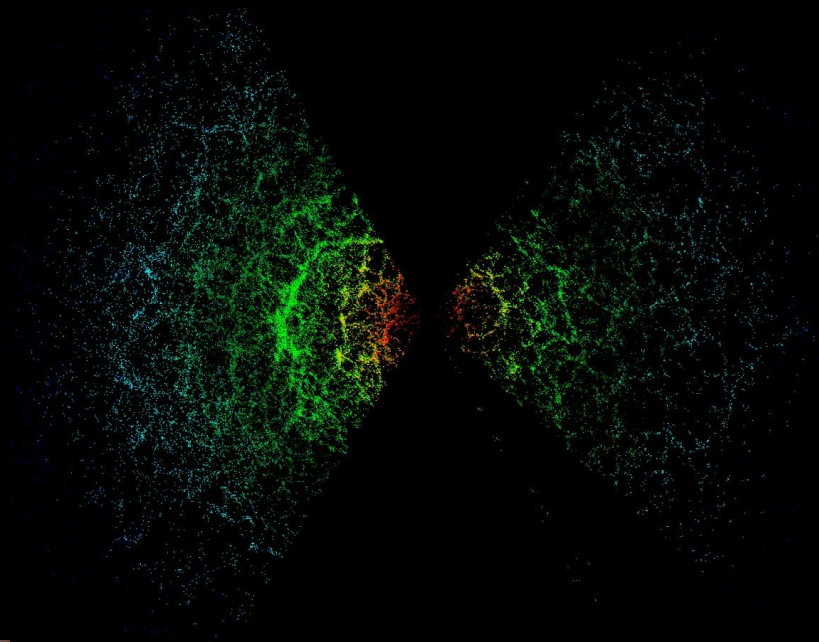
How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

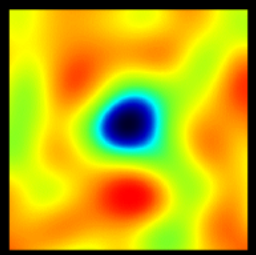
NSF staff will give careful consideration to the following in making funding decisions:

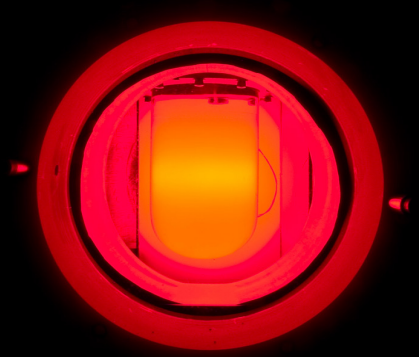
Integration of Research and Education

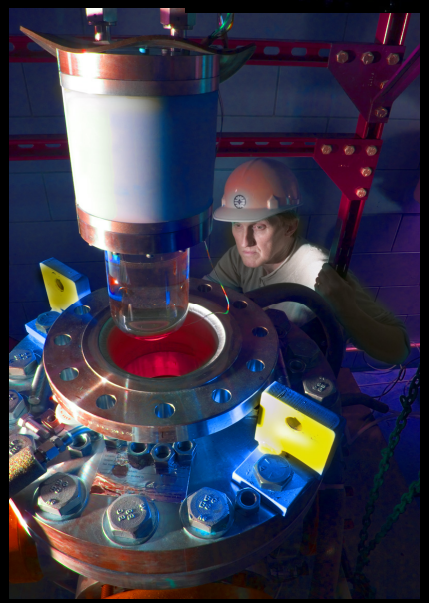
Integrating Diversity into NSF Programs, Projects, and Activities

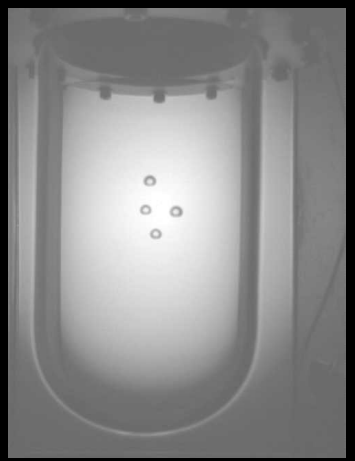
KICP resources
people, places, data, viz

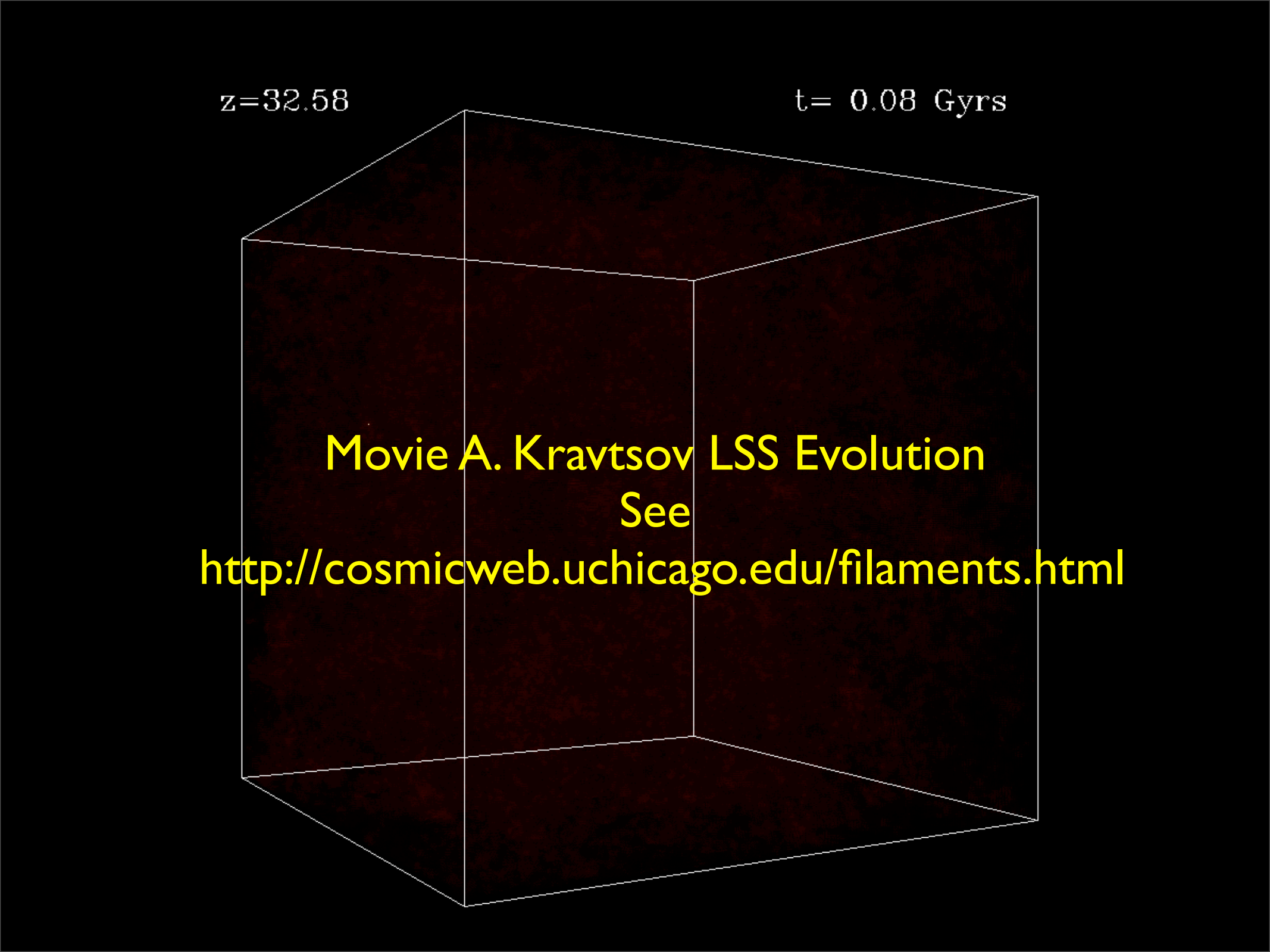








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Movie A. Kravtsov LSS Evolution
See
http://cosmicweb.uchicago.edu/filaments.html


PMT
AIRFLOW

South Pole Telescope

Magellan Telescopes LCO

CARMA

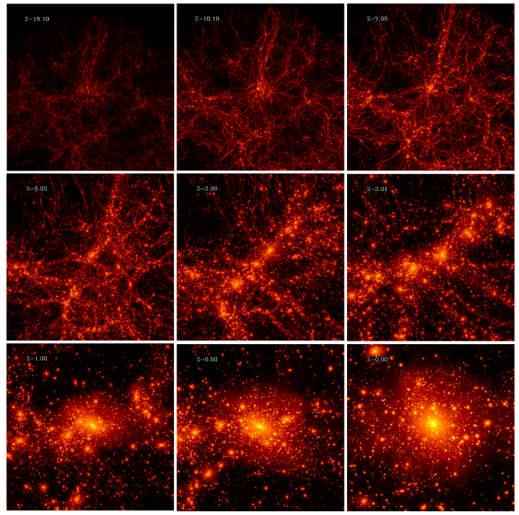

Movie: time-lapse CARMA Array
See
http://astro.uchicago.edu/glpa2010

What Each Partner Contributes

- KICP - broadens content
  - Scientific Data & Visualizations
  - Stories/Narratives
  - E&O Expertise and Interface
  - Scientists
- Adler
  - SVL Resources
  - ISE & Viz Expertise
  - Audiences
  - Scientists

Challenges

- cosmology = complex science
  - concepts
  - scales
  - interferometers, co-moving coordinates, z....
- interesting to researchers ≠ interesting to public
- larger context of the museum
- busy people



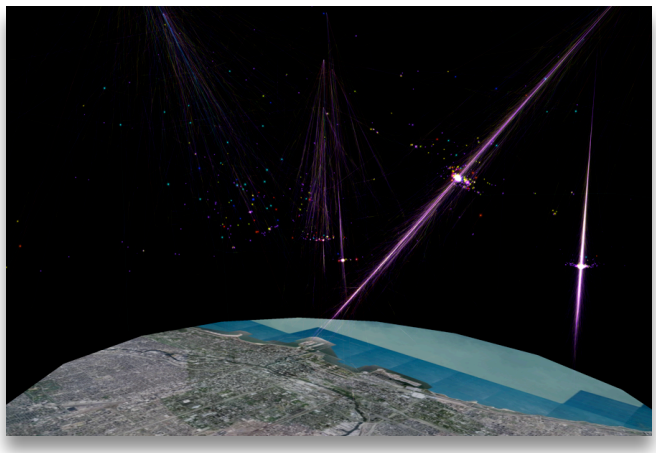
Movie: time-lapse fisheye CARMA Array

See

http://astro.uchicago.edu/glpa2010

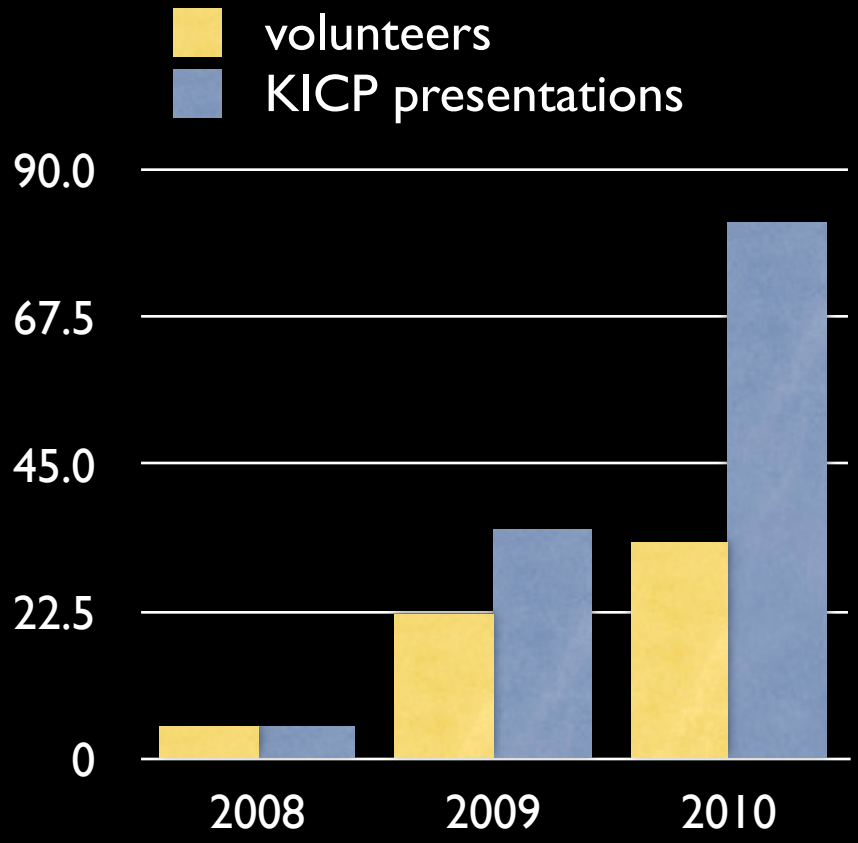
Lessons

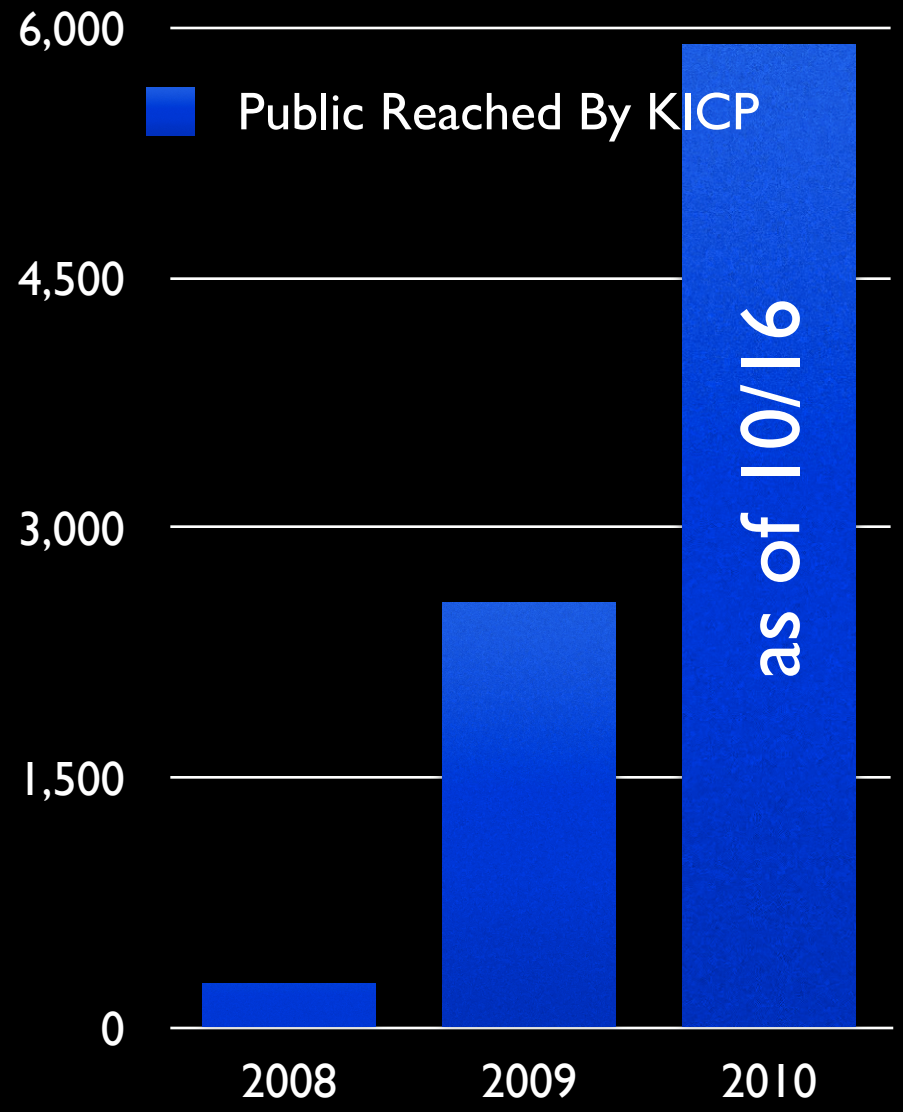
- lower threshold & make meaningful
  - 4 scientists
  - 4 museum/planetarium
- genuine collaborations - respect partner



Progress:

Astronomy Conversations/KICP





SVL totals: 248 sessions & 18,900 visitors

Partake?

How you might adopt/adapt?

- local partner and/or scientists on travel
- lower tech e.g., simple computer + projector
- use existing resources
- remember benefits for the scientists
  - YOU have
    - audiences
    - expertise
  - nsf research dollars tied to “broader impacts”
  - individuals
    - improve communication & team-working skills
    - generally enjoy the experience

resources @

http://astro.uchicago.edu/glpa2010

The End