



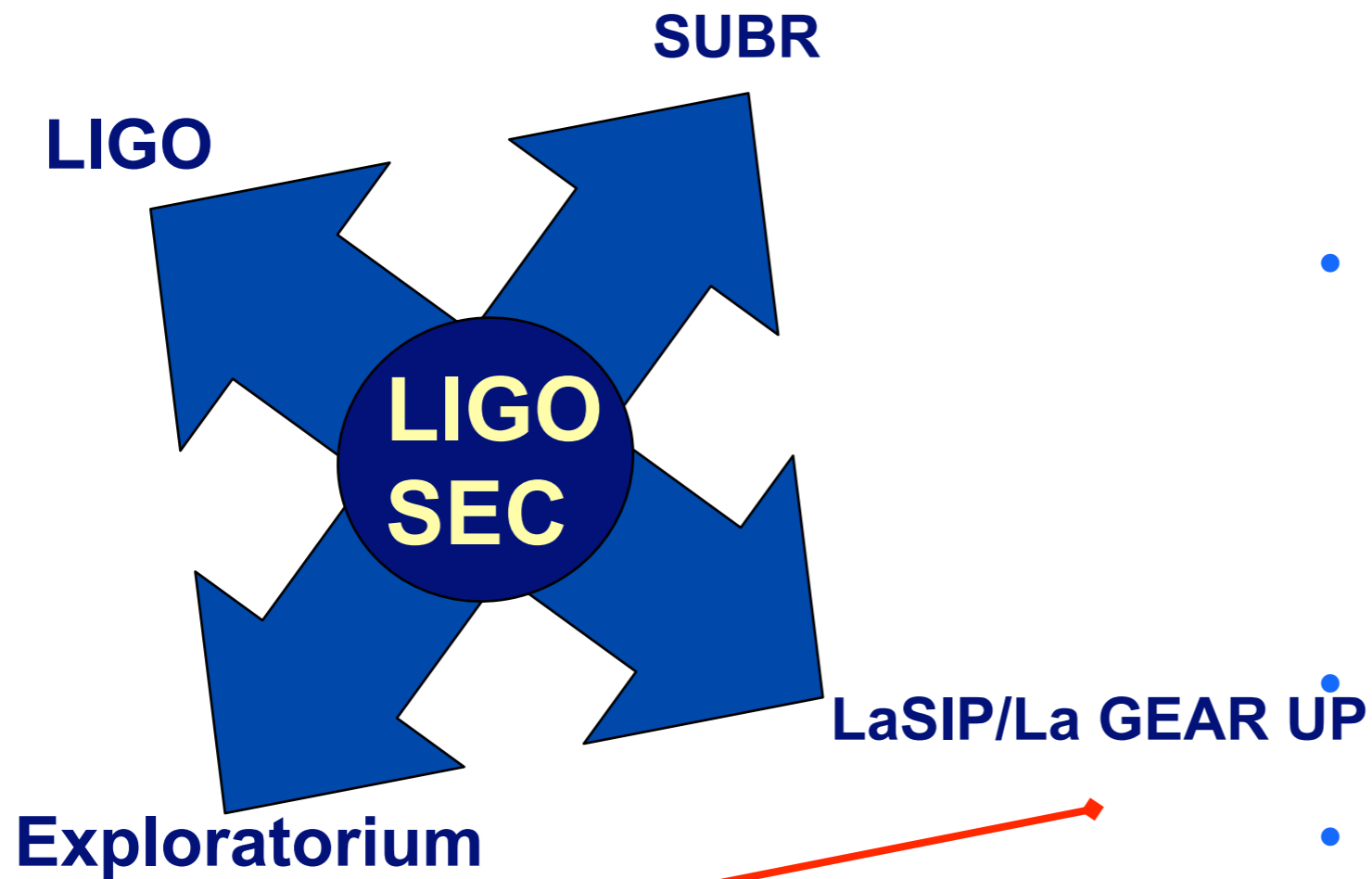
the Science Education Center at LIGO Livingston

Joe Giaime, for the Livingston LIGO SEC team:
John Thacker, Kathy Holt and Deborah Muhammad



The LIGO SEC work is supported by the National Science Foundation grants Phy-0107417 and PHY-0355454





- Cutting-edge Scientific research laboratory / Observatory.
- Local research university with Education college and LIGO science collaboration membership.
- State education agency.
- Informal learning center, with long and broad experience.

Southern University

College of Education

College of Sciences

- Dept of Physics
- Dept of Mathematics

- A Leading producer of teachers in LA
- Largest HBCU System in the nation



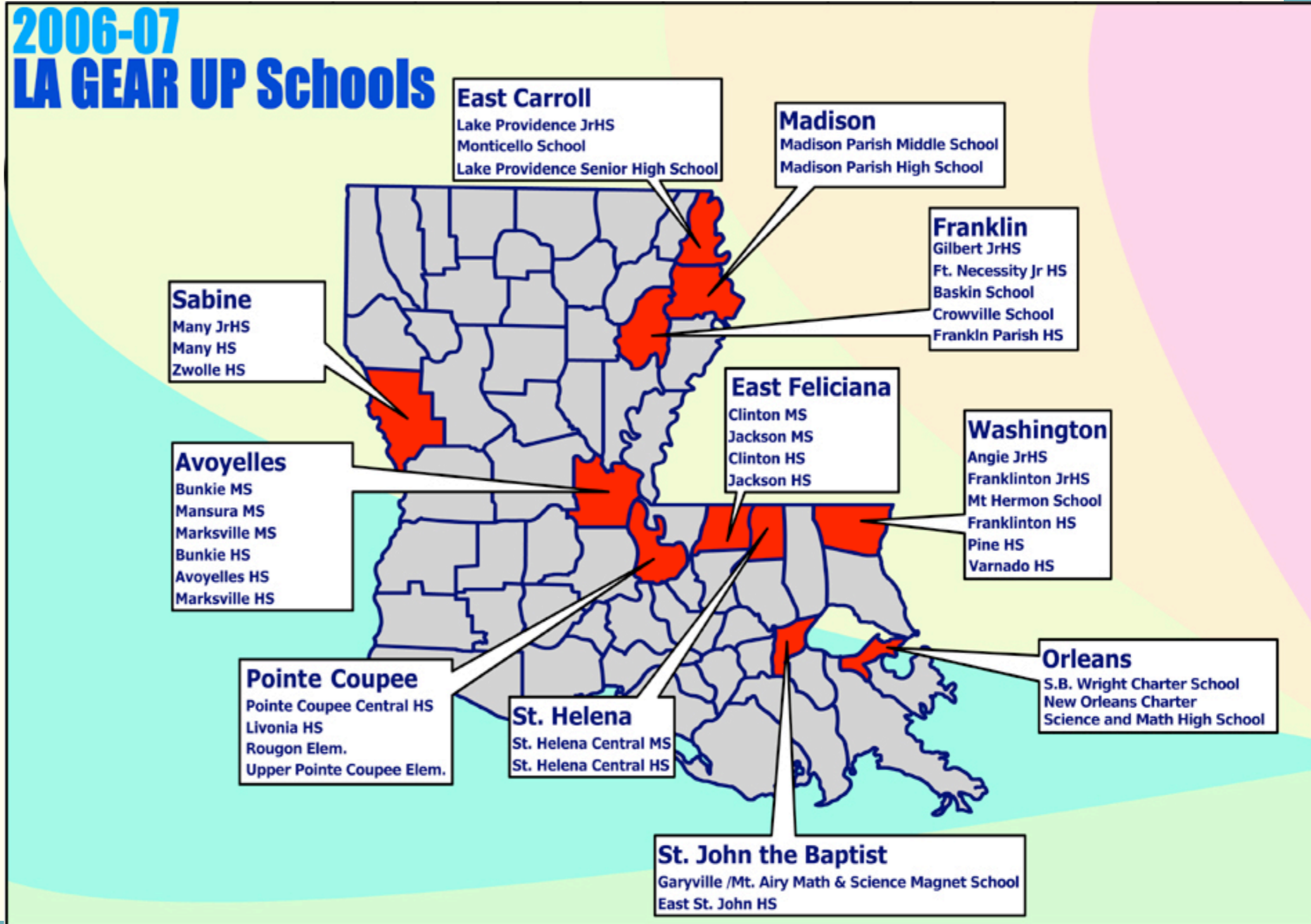
- Course Redesign
- E-Learning
- Pre-service Teacher training
- Docent training
- Student Field Trips



LA GEAR UP

Louisiana Gaining Early Awareness and Readiness for Undergraduate Programs

- State K-16+ educational reform agency
- School connections
- Teacher Professional Development

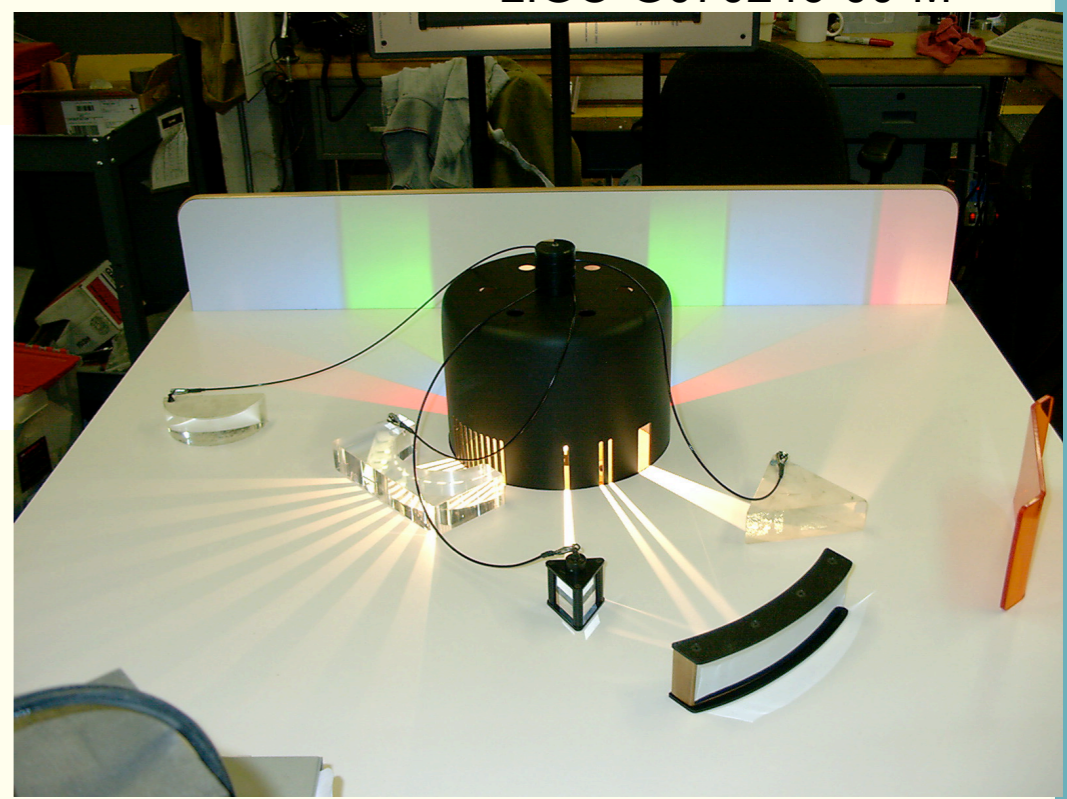


Exploratorium



Informal learning environment

An educational center



Over 650 exhibits

Teaching & Learning



the exploratorium
Institute for
Inquiry



the LIGO Livingston Observatory

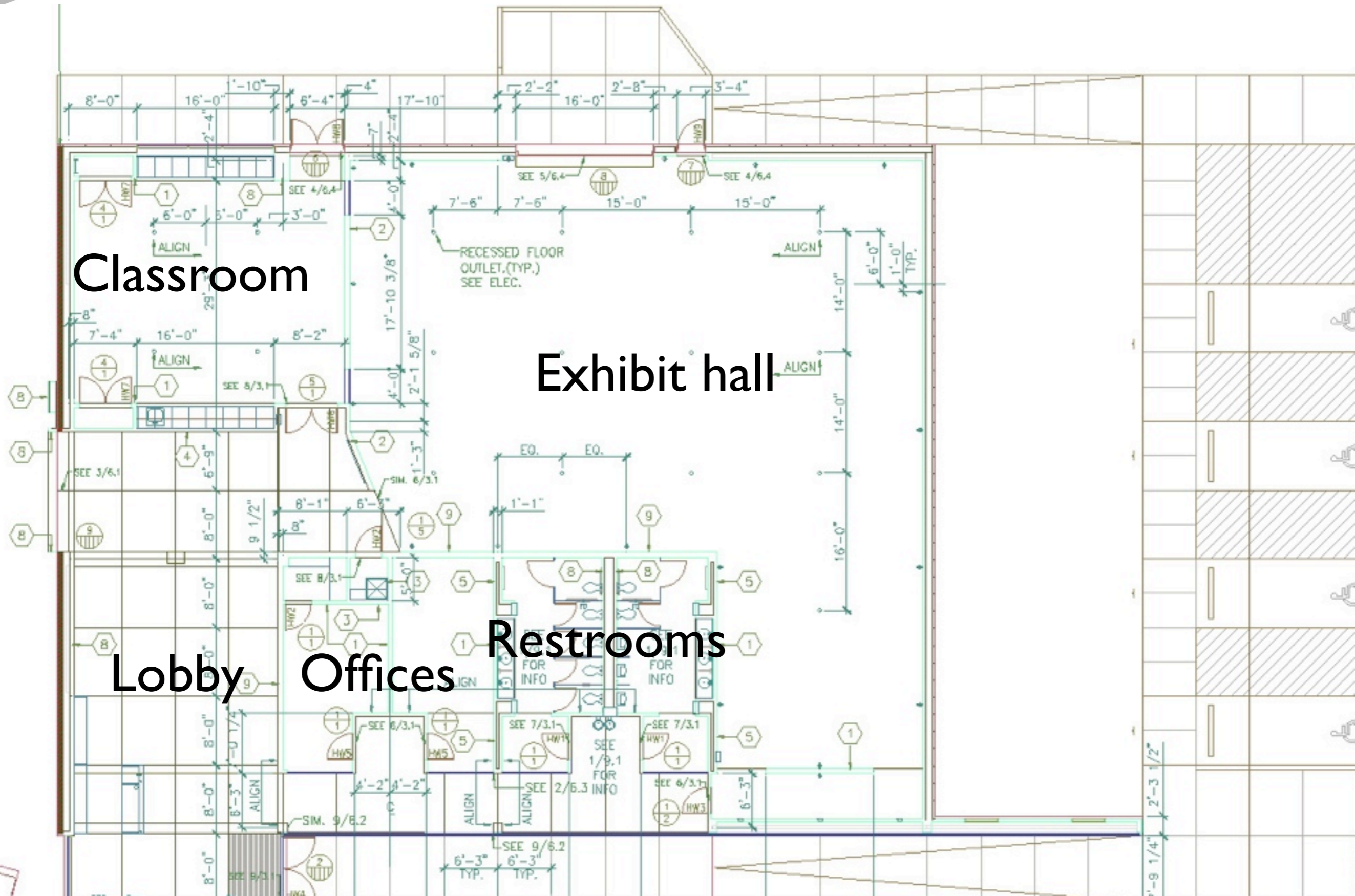




the LIGO SEC building

- Funded through an NSF cooperative agreement with Caltech, as part of LIGO SEC partnership.
- 840 m² facility, with 460 m² of exhibit space, a 30-student classroom, two offices and rest rooms. (9000 sq foot, 5000 sq foot.)
- Connected to pre-existing building with 150 seat auditorium, machine shop, and offices of many of LLO's staff.
- Just across the street from the observatory control room.
- Facade incorporates kinetic sculpture that is a coupled pendulum science exhibit.





Classroom

Exhibit hall

Restrooms

Lobby

Offices

LIGO AIA New Orleans award

FOR IMMEDIATE RELEASE

January 26, 2007

The American Institute of Architects – New Orleans Announces Recipients of 2007 Design Awards

Award Honors Exemplary Models of Residential, Community & Restorative Design

The New Orleans chapter of the American Institute of Architects (AIA) has announced the recipients of the 2007 AIA New Orleans Design Awards. Twelve Honor and Merit Awards were chosen from over 70 applicant projects by a jury composed of three principals from leading national architecture firms. This year, AIA New Orleans received more applicants than any other year in its history. The awards theme of 'Good Design is Good Business' reflects the ongoing work of AIA New Orleans to highlight the best in design and revitalization Post-Katrina and Rita, and call attention to the importance of architecture in Louisiana's cities and communities.

• • •

Award of Honor: Ligo Science Education Center

Livingston, Louisiana

Eskew+Dumez+Ripple

Form and function come together in an exciting and unexpected way in the design of this building where a dynamic exterior wall suggests its purpose: a science education center.

Photo Credit: Peter Richards, Shawn Lani



- LIGO SEC Building:
 - » **Architect: \$161 k**, consisting of schematic design, \$20 k; Design development, \$20 k; Construction documents, \$60 k; Contract admin, \$33 k; additional site visits, \$22 k.
 - » **Construction: \$1.9 Million**, consisting of General conditions, \$155K; Demolition, \$8K; Site paving, \$34K; Building foundation, \$130K; Masonry, \$31K; Structural steel, \$131K; Carpentry, \$19K; Millwork, \$13K; Doors & finish hardware, \$35K; Site work, \$29K; Metal wall & roof panels, \$313K; Storefront & curtain wall, \$108K; Drywall, insulation, and acoustical, \$107K; Ceramic tile, \$22K; Carpet, \$25K; Paint & coatings, \$64K; Plumbing, \$53K.
- To Exploratorium:
 - » **Exhibits: \$850 k.**
 - » **Training: \$300 k.**
- These figures do not include the wave wall kinetic facade.

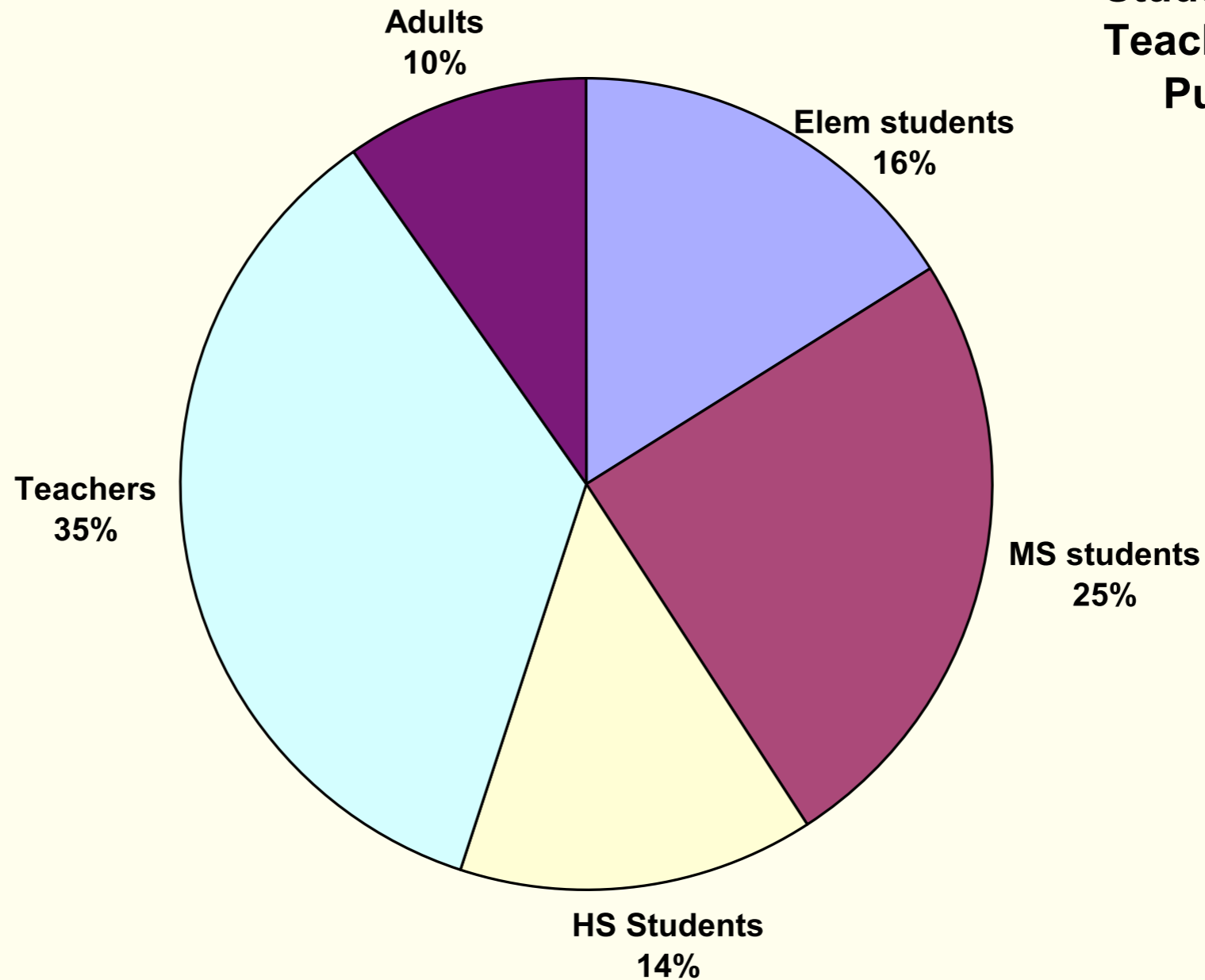
All Visitors

Total visitor-days: 3459

Students = 55%

Teachers = 35%

Public = 10%



Note: these figures do not include outreach conducted off-site.



Student visits to LIGO

A typical program last from 9:00 am to 1:00 pm

Programs are specially designed for group

Grade level appropriateness

Correlated to LA Comprehensive Curriculum

Morning hands-on activities

Lunch is usually eaten on site at our pavilion

Exhibit free-play

Site tour

Walk to the Interferometer arm

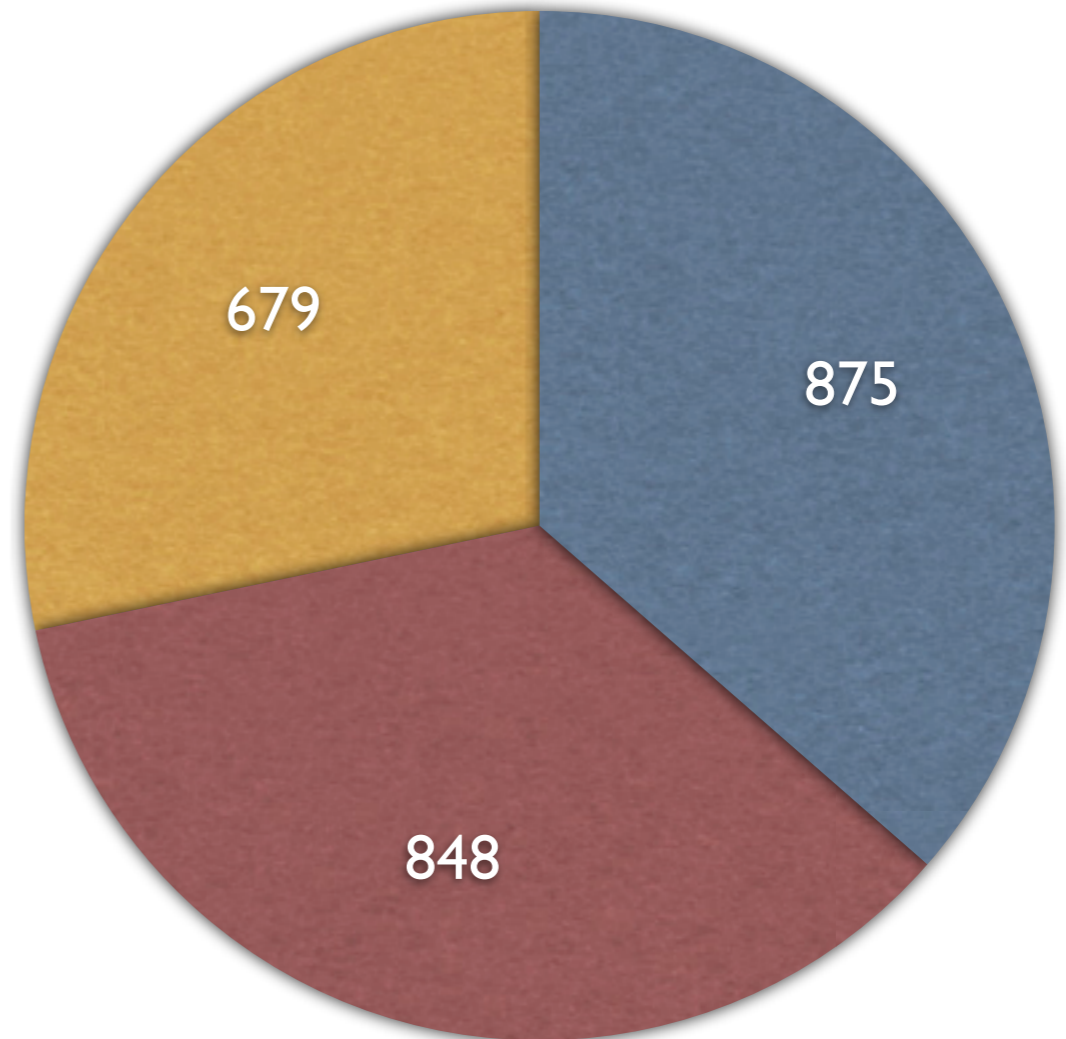
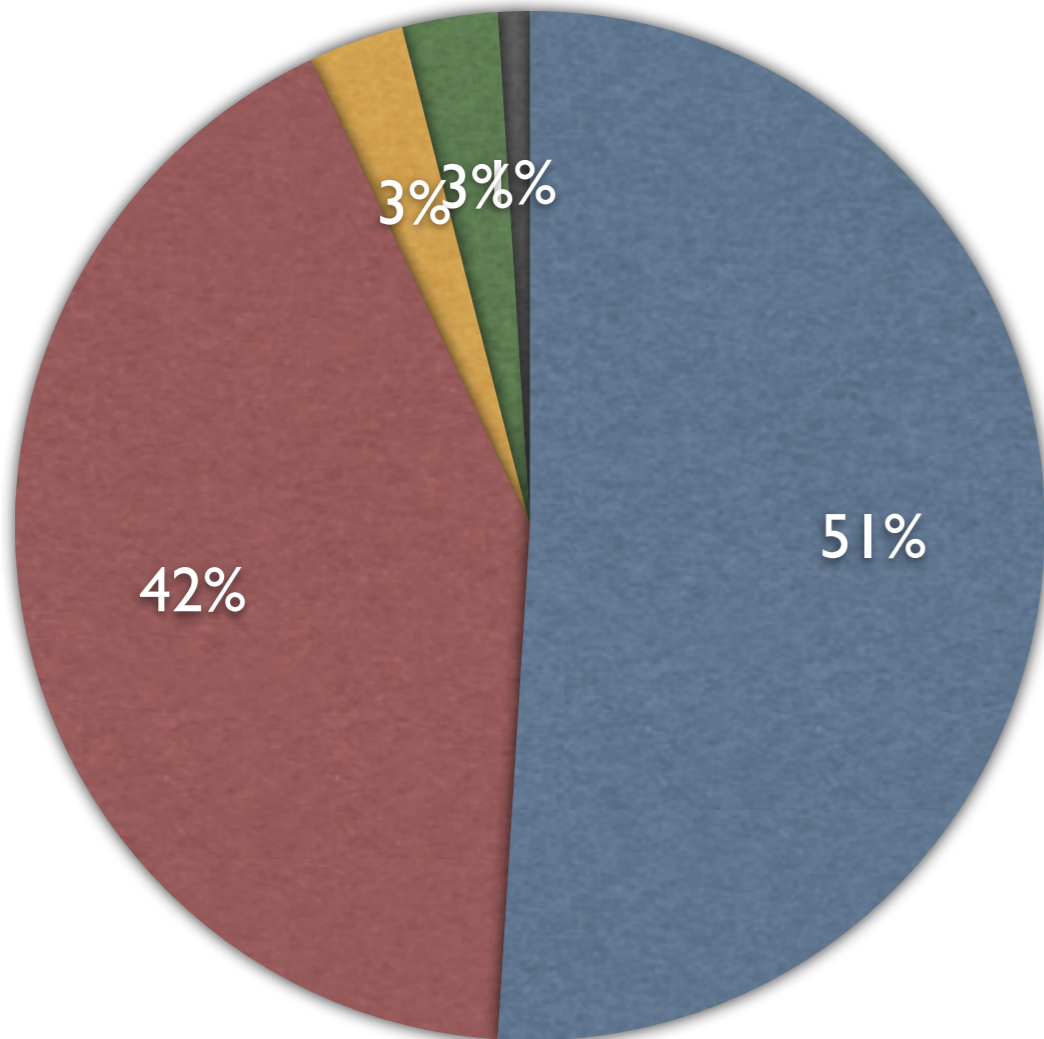
Control Room



Student visits, Dec '06 – May '07

- Black
- White
- Hispanic
- Asian/Pacific Islander
- Native American

- Elementary School
- Middle School
- High School





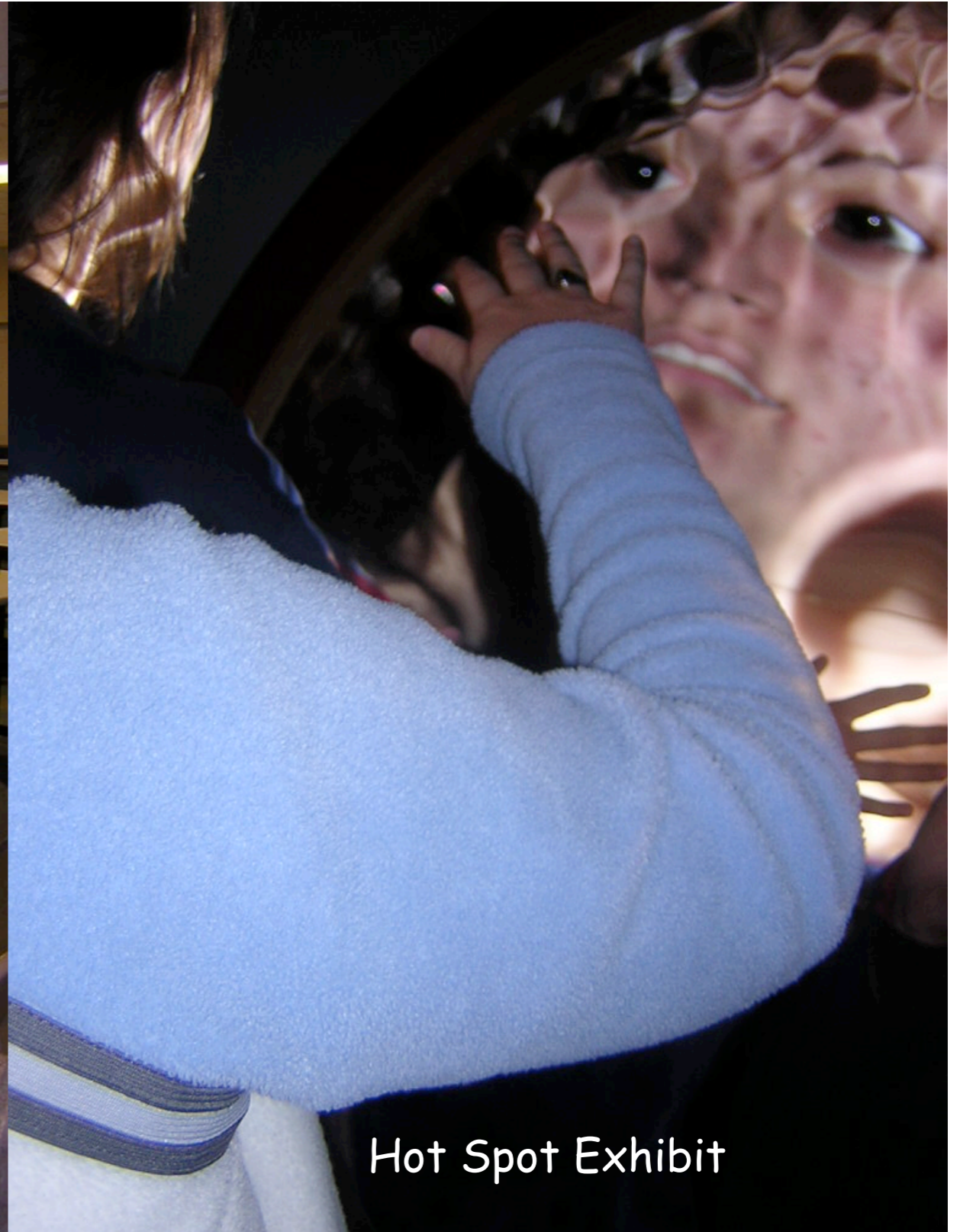
Polish Portraits (Light-Interference)

Exhibit Play

St. Josephs Academy Baton Rouge, Louisiana



Bouncing Ball Exhibit



Hot Spot Exhibit

Outside Tour



Northside High School
Lafayette, Louisiana

Interferometer Arm



Student pulls rope for
"Wave Wall"





Pre-K - 1st Grade Students listen as Valery Frolov talks about light.

- Of the 28 teacher professional development events:
 - » 12 Math/Science Partnership (MSP) workshops
 - » 8 LA GEAR UP sponsored workshops
 - » 8 Workshops organized by various independent organizations.
- Pre-service component:
 - » Southern University at Baton Rouge (SUBR)
 - » Southeastern Louisiana University
- In-service component:
 - » Math Science Partnerships (MSPs)
 - » LA Gear UP (Louisiana gaining early awareness and readiness for undergraduate programs.)
 - » Independent

- SUBR Pre-service:
 - » Course redesign
 - » E-learning
 - » Docent training
 - » PD summer institute
 - » field trips for students
- SLU Pre-service:
 - » SLU College of Education required course for Elementary and Middle school majors.
 - » Spring '07: 4 classes held at LIGO SEC
- In-Service PD:
 - » 12 MSP events
 - LSU: MS Science 1, HS Algebra and Physics, MS Science 2, MS Math
 - LSU Eunice: HS Algebra and Physical Science
 - UNO: MS Math and Science
 - SLU: MS Science
 - » 8 LA Gear UP sponsored efforts
 - » 8 Independent efforts

Training and Support from the Exploratorium To Date

- Exhibit training workshops (7 days)
- Proposal reviews for LA GEAR UP (6 days)
- Participation in TI, IFI, and CILS programs (multiple people/multiple weeks in SF)
- Teacher workshops (2 days)