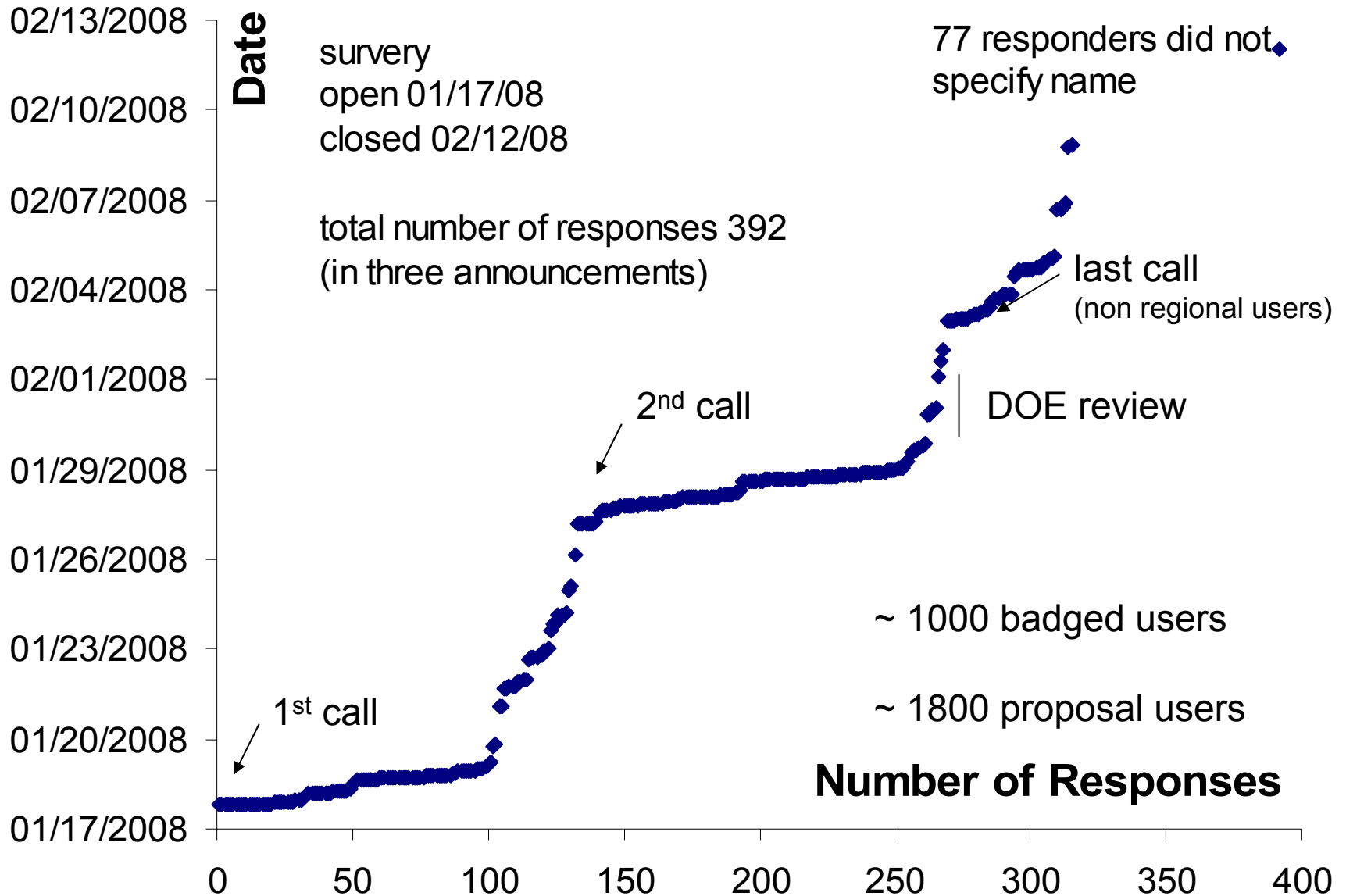


# SSRL User Survey 2008

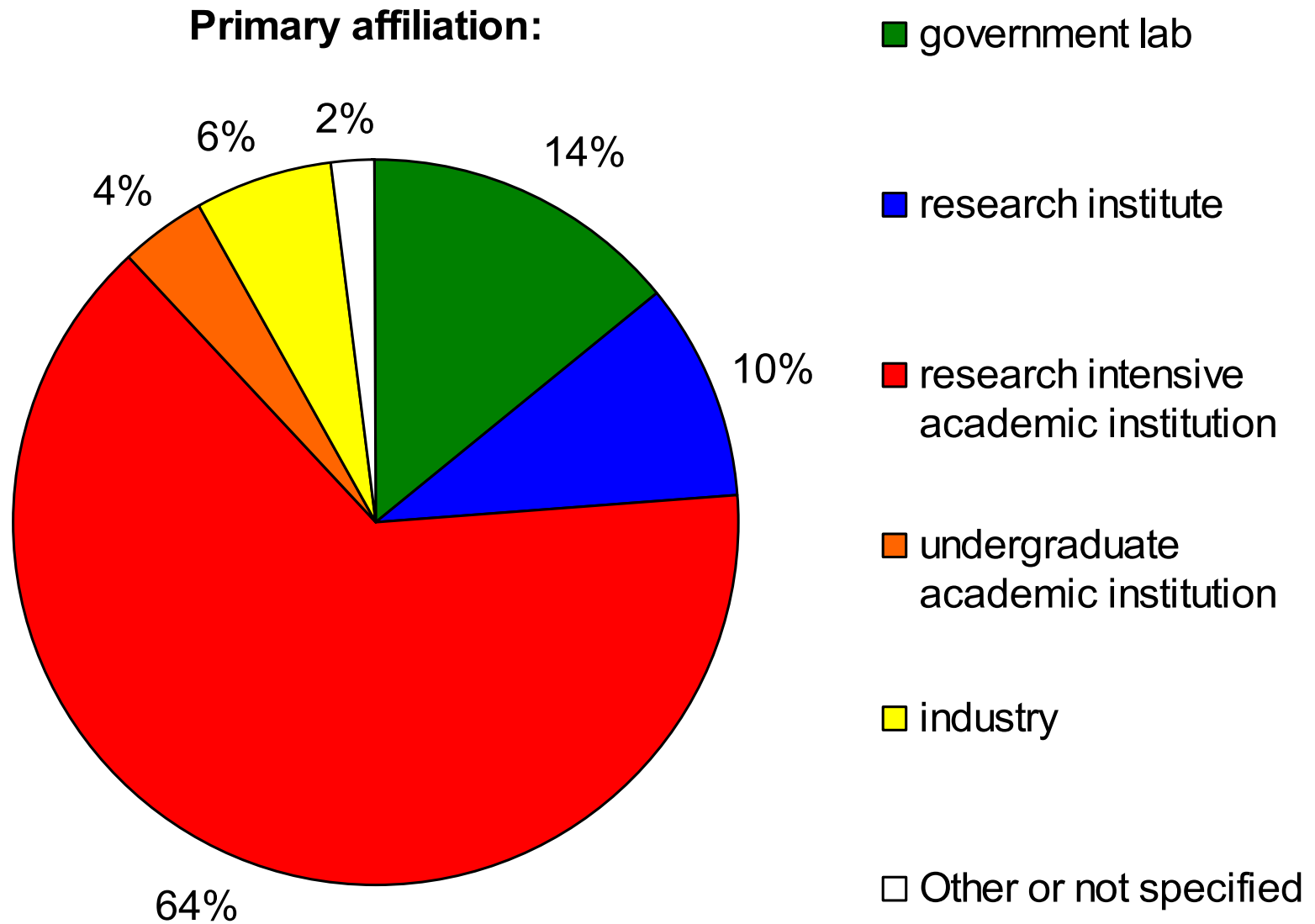
Robert K. Szilagy  
Montana State University, Bozeman, MT  
SSRL UOEC chair

February 21, 2008

# Used ~1500 functional email addresses



# Who are the SSRL users?



# Who are the SSRL users?

221 identified out of 392

43 UC Berkeley(11) Davis(7) LA(3) SF(6) SB(5) SC(4) Merced(4) Irvine(3)

29 Stanford University

9 SSRL

9 University of Texas at El Paso

6 Massachusetts Institute of Technology

6 The Scripps Research Institute

6 Vanderbilt University

5 Lawrence Berkeley National Laboratory

5 University of Arizona

5 University of Michigan

4 Montana State University

4 The Pennsylvania State University

4 University of Kansas

3 Lawrence Livermore National Laboratory

3 Hauptman-Woodward Medical Research Institute

3 University of Illinois

3 University of Utah

3 University of Washington

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California Institute of Technology

Cornell University

Johns Hopkins University

Louisiana State University

MD Anderson

North Carolina State University

Texas A&M University

The Ohio State University

U.S. Geological Survey

University of Colorado

University of Kentucky

University of Minnesota - Twin Cities

University of Nebraska - Lincoln

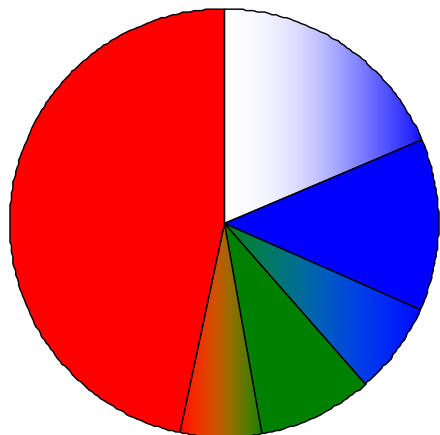
University of Oklahoma

47 other institutes with 1 response

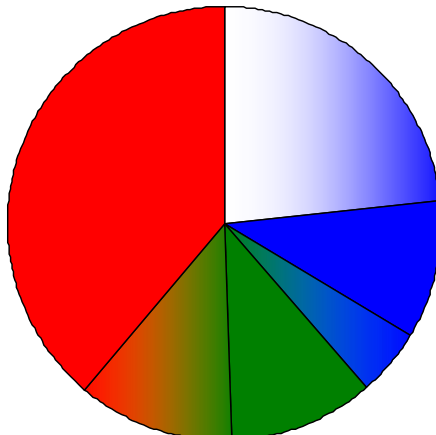
45% in-state institute

# Current and Past Science Focus:

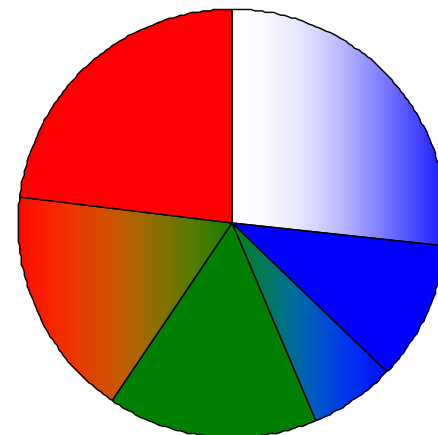
Structural Molecular Biology/Life Sciences



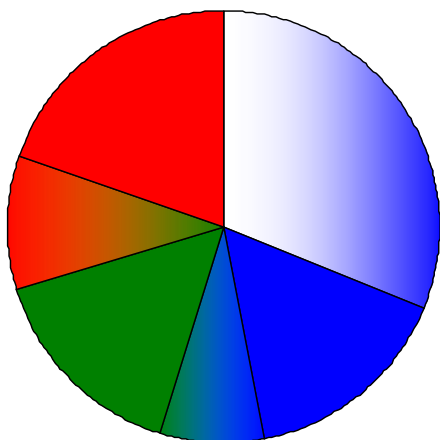
Material Science/Chemical Sciences



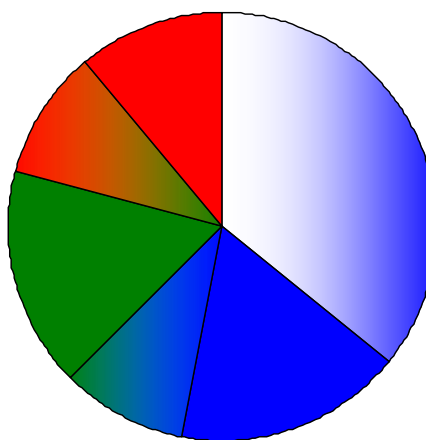
Nanoscience Science



Molecular and Environmental Interface Science



Ultrafast Science



■ N/A

■ 1 (low)

■ 2

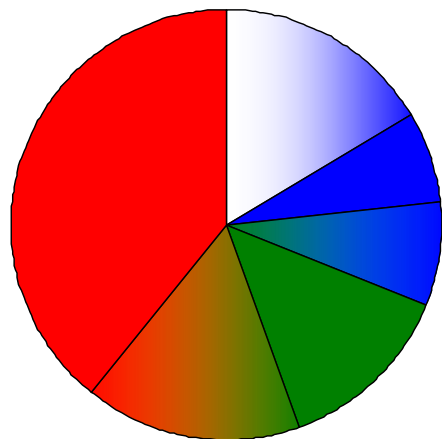
■ 3 (medium)

■ 4

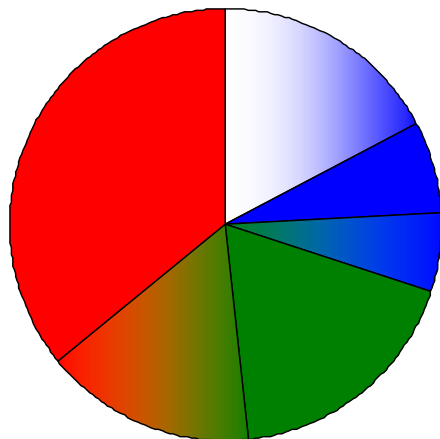
■ 5 (high)

# Current and Past Experimental Technique:

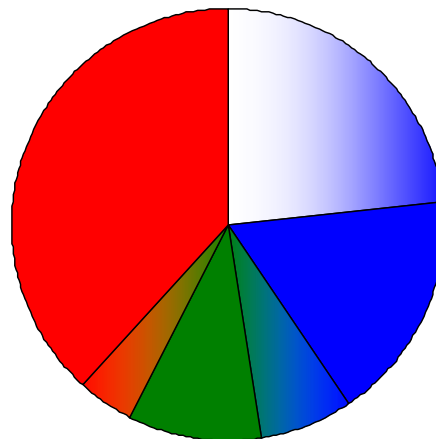
X-ray Absorption Spectroscopy



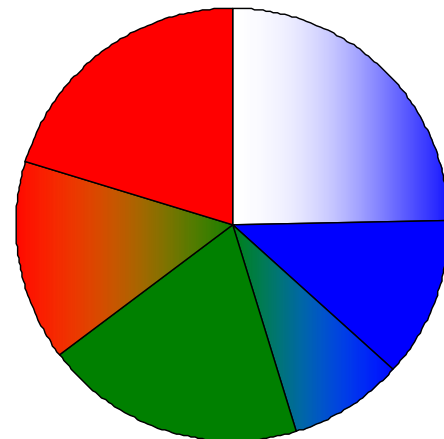
X-ray Scattering



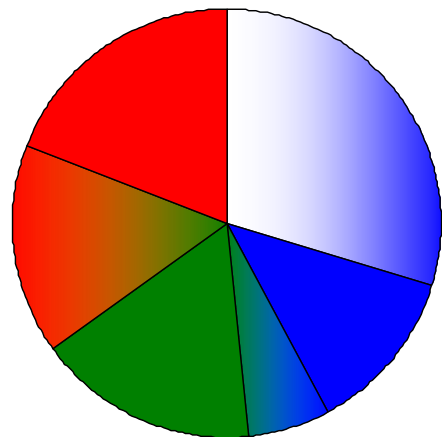
Macromolecular Crystallography



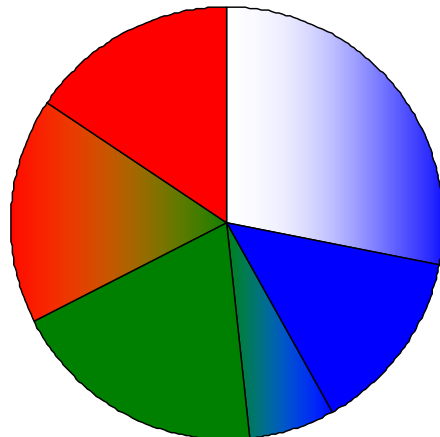
Time Resolved Techniques



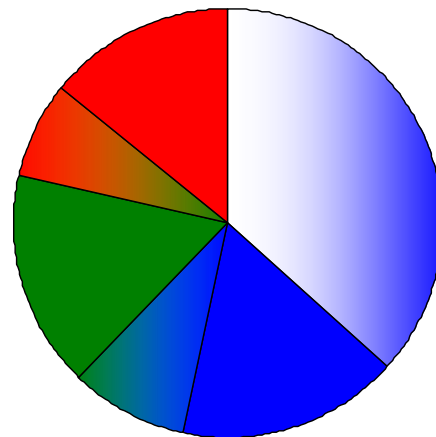
Spectromicroscopy/Imaging



Detector/Instrument/Beamline Development



Photoemission Spectroscopy



■ N/A

■ 1 (low)

■ 2

■ 3 (medium)

■ 4

■ 5 (high)

## Current and Past User Science:

	average	N/A
Structural Molecular Biology/Life sciences	3.11	19%
Material Science/Chemical Sciences	2.94	23%
Nanoscience Science	2.56	27%
Molecular and Environmental Interface Science	2.16	31%
Ultrafast Science	1.81	36%

## Current and Past Experimental Technique:

	average	N/A
X-ray Absorption Spectroscopy	3.24	16%
X-ray Scattering	3.16	17%
Macromolecular Crystallography	2.69	23%
Time Resolved Techniques	2.48	25%
Spectromicroscopy/Imaging	2.34	30%
Detector/Instrument/Beamline Component Development	2.30	28%
Photoemission Spectroscopy	1.83	37%

5: high

4

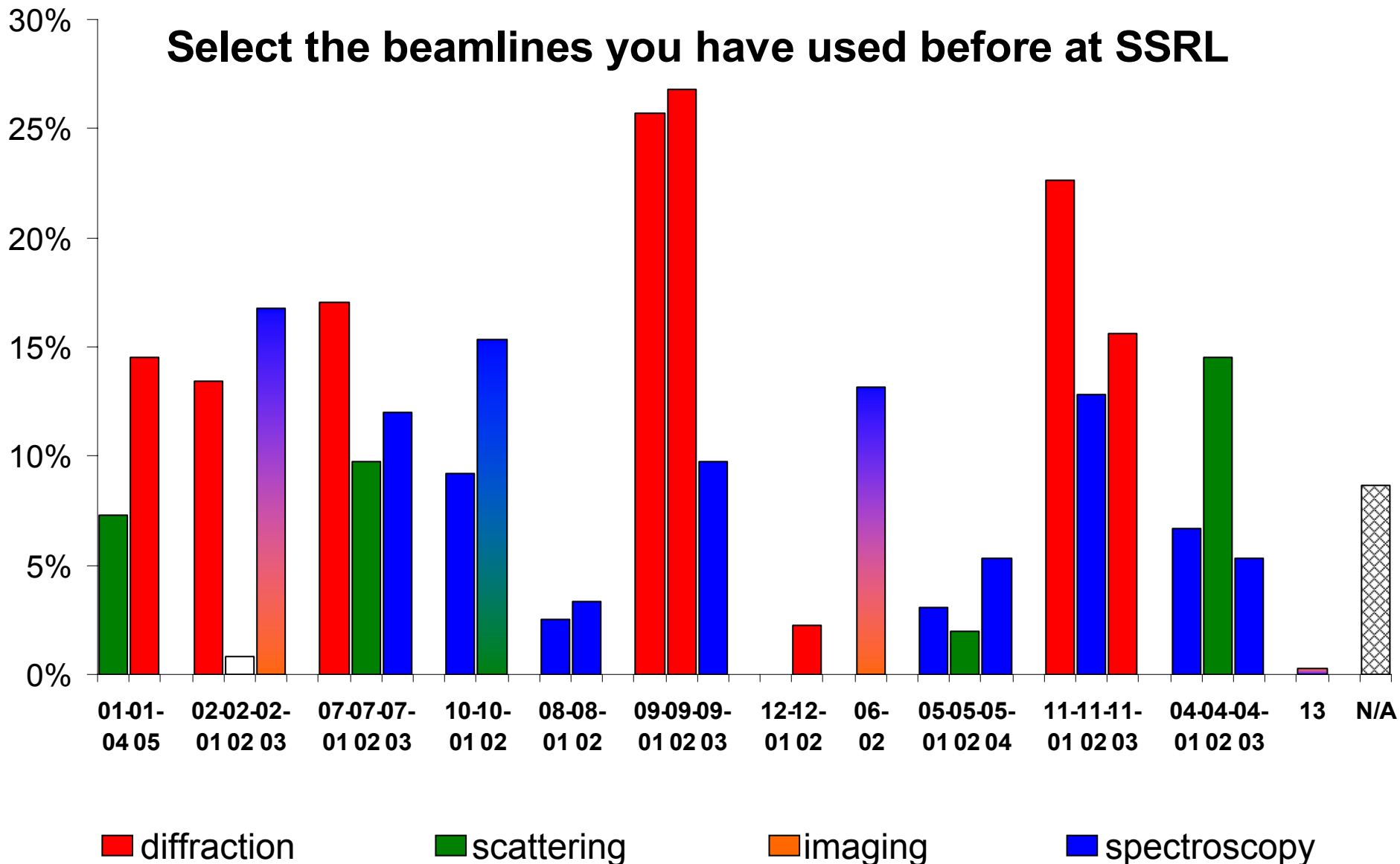
3: medium

2

1: low

# Current and Past Experience at SSRL:

Select the beamlines you have used before at SSRL





# Other Scientific Interest:

microphase separation transition of a biomedical model of segmented polyurethane block copolymers; dynamic state of protein structures; Enzyme structure and mechanism; Membrane protein crystallography; metallobiochemistry and metal site structure protein function connections; zinc compounds that mimic the active site of zinc metalloproteins; structure of proteins that take part in the platelet aggregation in human blood; development of artificial photosynthetic systems

semiconducting polymers; structural characterization of catalysts on amorphous supports; in-situ phase change/chemical reaction studies of material structure; air sensitive in situ experiments in inert or reactive atmosphere; imaging of integrated circuits with x-ray microscope; transition metal oxides -- d-state splitting and Jahn-Teller effects

surface science, environmental science; environmental science, oceanography, low-temperature geochemistry, environmental quality, civil and environmental engineering; environmental transport and speciation of metal contaminants

liquid crystals

fossil energy

# Other Experimental Technique:

automatically move the sample, fluorescence detectors on both sides of the cryostat; low energy XAS; using various spectroscopic methods (IR, NMR) and TEM in concert with EXAFS and XANES characterization; XAFS, XANES, Partial Fluorescence Yield; photon-in/photon-out X-ray spectroscopy; time-resolved XANES and EXAFS spectroscopy in from ultrafast to milliseconds; X-Ray fluorescence; Electron spectroscopy

SPPS user; LCLS; FEL; photocathode development for LCLS and nanolithography applications; Ultrafast x-ray measurements, microscopy on nanomaterials, general characterization of materials.

beam line development; area detectors; electrical signals from BPMs

development of beamlines for large unit cell crystals (ribosomes); 3D-single crystal microspectrophotometer; microfocus XRD beamline

Diffraction from Liquids; SAX of liquid crystals; X-ray fiber diffraction; Time-dependent small angle x-ray scattering

X-ray emission spectra of zinc compounds at beamline 6-2. High enough flux to look at actual zinc metalloproteins using this technique, but that would require about  $10^4$  times the flux in order to get comparable signal/noise. Therefore, I'd be interested in any effort to either increase the incident flux or to improve the focusing optics.

TXRF, "x-ray microprobe with  $\mu$ -XRF,  $\mu$ -XAS, STXM"

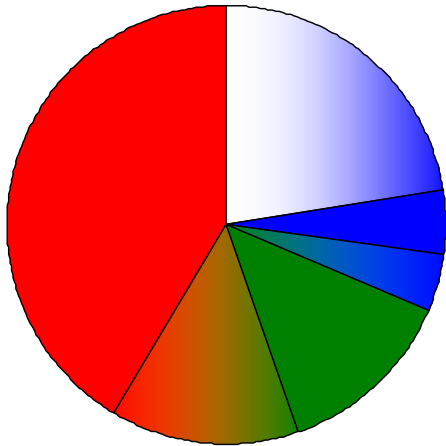
C NEXAFS studies at ALS and NSLS, STXM at NSLS, and SAXS at ANL

GIXS

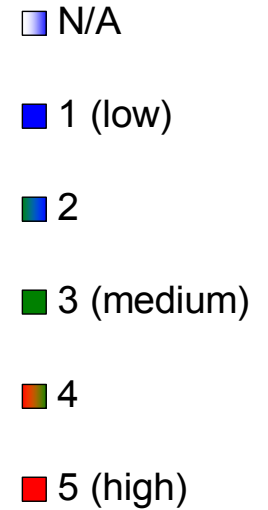
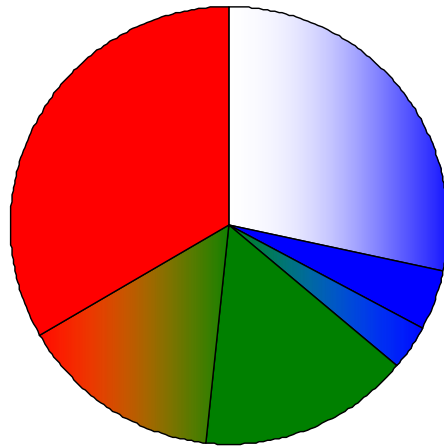
experiments in 1000 to 2000 eV

# Proposed Scientific Facilities/Initiatives

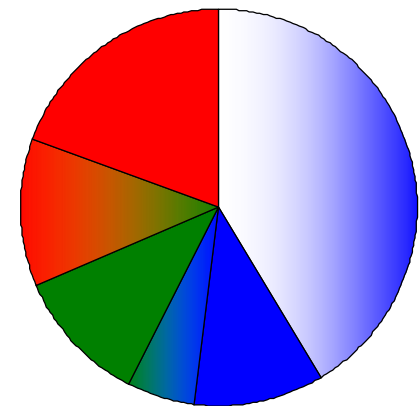
Improved Facilities for X-ray Scattering and Diffraction



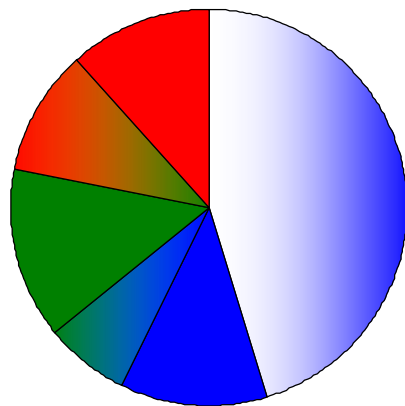
Improved Detectors, Multi-Element, High Count Rate Energy-Dispersive Detector



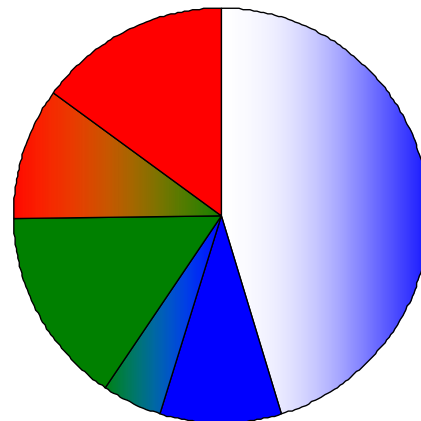
X-ray Microscopy Beam Lines 1.5-15 keV



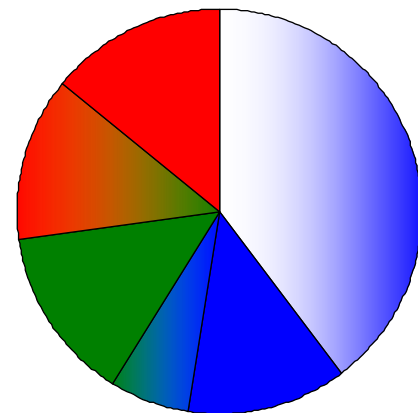
X-ray Microscopy Beam Lines 200-1500 eV



Inelastic X-Ray Scattering and Advanced Spectroscopy Beam Line

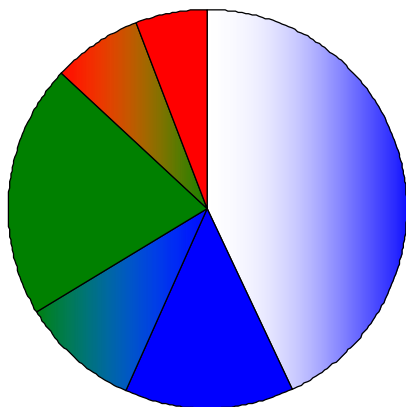


Small Angle X-Ray Scattering Beam Line for Materials Science

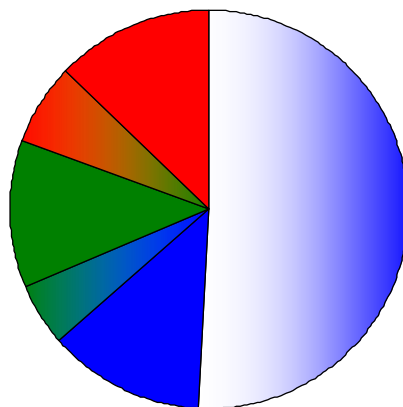


# Proposed Scientific Facilities/Initiatives

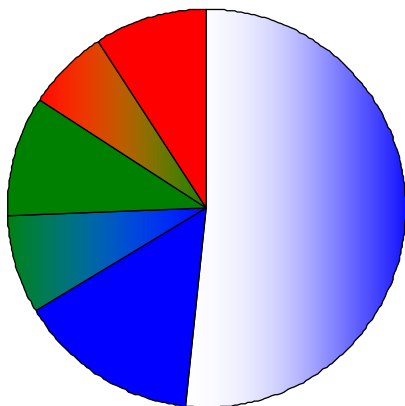
Undergraduate Research Initiatives



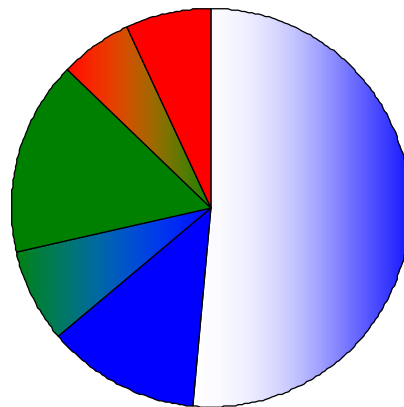
High Resolution Photoemission Beam Line



Heating Laser, Time Resolved/Materials Dynamic:



Reorganization/Optimization of Scattering Faciliti



# Proposed Scientific Facilities/Initiatives

	average	N/A
<b>Improved Facilities for X-ray Scattering and Diffraction</b>	<b>3.47</b>	<b>14%</b>
<b>Multi-Element, High Count Rate, Energy-Dispersive Detector</b>	<b>3.28</b>	<b>19%</b>
<b>X-ray Microscopy Beam Lines 1.5-15 keV</b>	<b>2.28</b>	<b>34%</b>
<b>Small Angle X-Ray Scattering Beam Line for Materials Science</b>	<b>2.09</b>	<b>32%</b>
<b>Inelastic X-Ray Scattering and Advanced Spectroscopy Beam Line</b>	<b>2.03</b>	<b>38%</b>
<b>X-ray Microscopy Beam Lines 200-1500 eV</b>	<b>1.98</b>	<b>36%</b>
Undergraduate Research Initiatives	1.74	35%
High Resolution Photoemission Beam Line	1.62	46%
Reorganization/Optimization of Scattering Facilities	1.46	47%
Heating Laser, Time Resolved/Materials Dynamics Facilities	1.46	47%

5: high

4

3: medium

2

1: low

# Proposed Scientific Facilities/Initiatives

directly investigate the structure of protein radicals; implement electronic spectroscopy at the macromolecular crystallography beam lines; microfocus x-ray source for macromolecular crystallography; high energy single crystal diffraction in order to decrease protein crystal damage; microfocus for small crystals

BL 6-2 detangled to become dedicated to ONE thing only; have additional spectroscopic components such as EPR, resonance Raman spectroscopy interface at the beam line; new-generation x-ray detector from Fermilab and Swiss synchrotron

controlled environment sample stages; Improve biological sample preparation facilities; Further facilities and capabilities for in-situ studies of material reactions and phase changes; Automation of Mat Sci beam lines; improvements in energy dispersive detectors (count rates) to speed up data collection; improved detectors for PX

more time for basic XAS experiments; spatially-resolved XAS measurements, at low and high energies; time-resolved XANES and EXAFS spectroscopy in from ultrafast to milliseconds; photon-in/photon-out X-ray spectroscopy; XAS line for low energies say 800-2500 eV

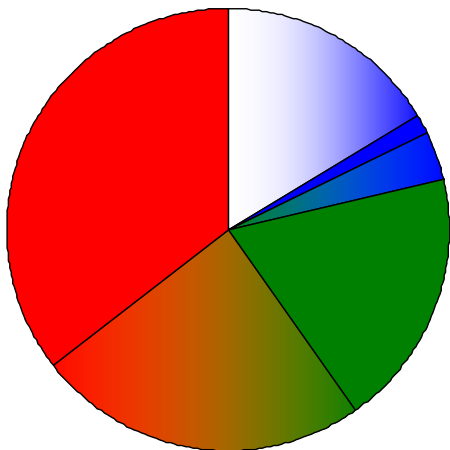
improved facilities for time-resolved SAXS of biological samples in the millisecond time domain that use minimal quantities of sample; automatic SAXS beamline for biological sciences

analysis related to art manufacture and deterioration

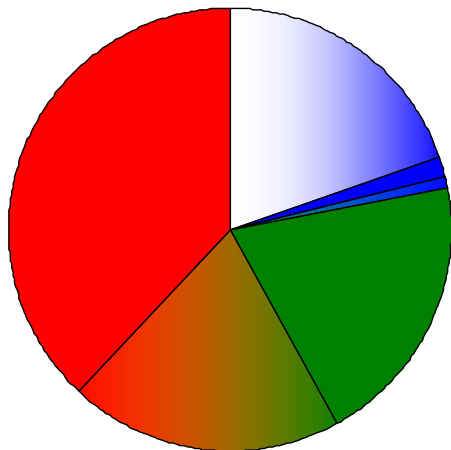
not enough papers result from the time allocated to users. This makes it very difficult for me to petition Congress for more resources for SSRL.

# Interest in SSRL Operations/Initiatives

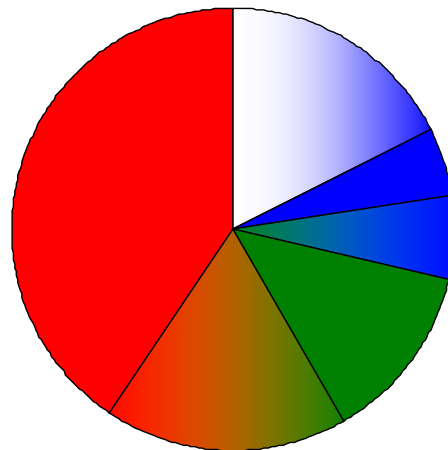
Upgrades to Beam Line Control and Data Acquisition Software



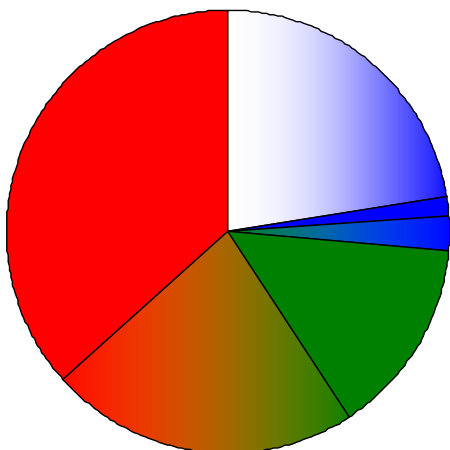
Future Beam Line Upgrades



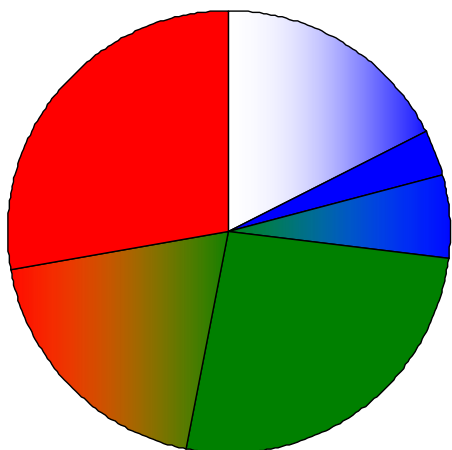
Automation of/Remote Data Collection



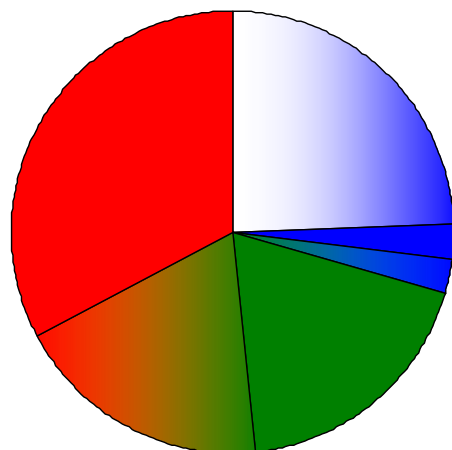
New Instrumentation (CCD, Multi-element Fluorescence Support after 5pm, during off-hours, week holidays)



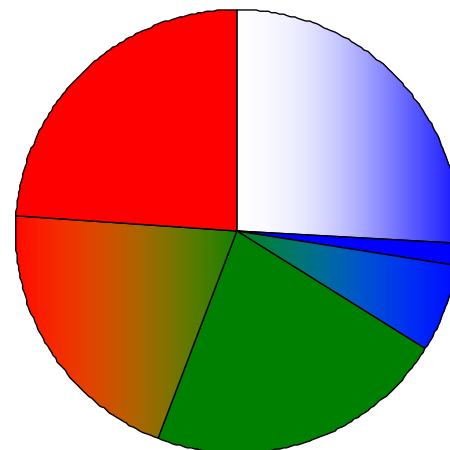
Beam Line Staffing



Beam Line Staffing

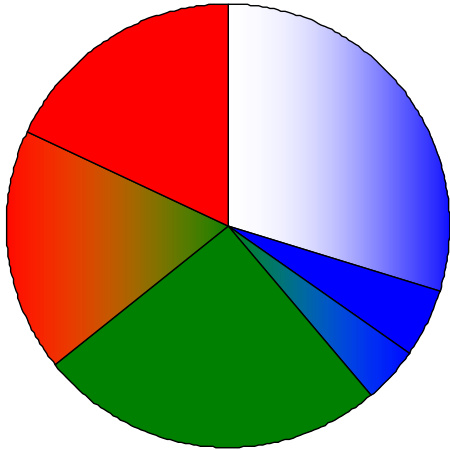


Increasing beam stability from accelerator

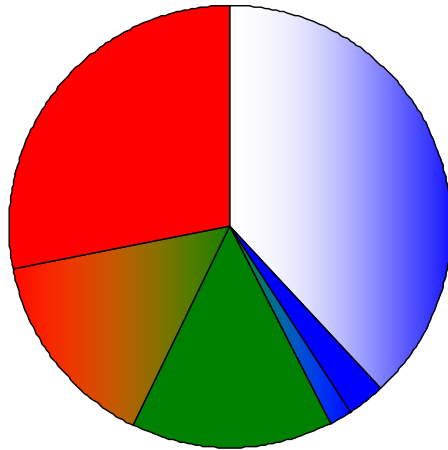


# Interest in SSRL Operations/Initiatives

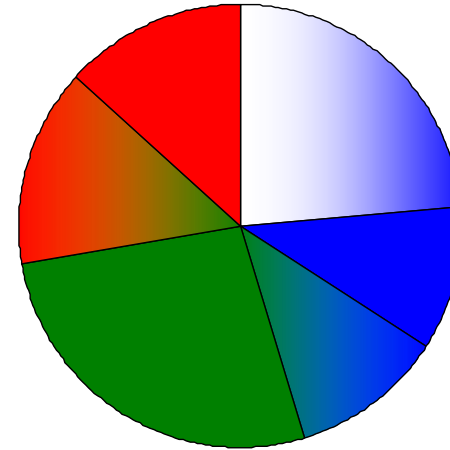
Improve brightness



Top-off Injection



Online/Off-site Safety Training



■ N/A

■ 1 (low)

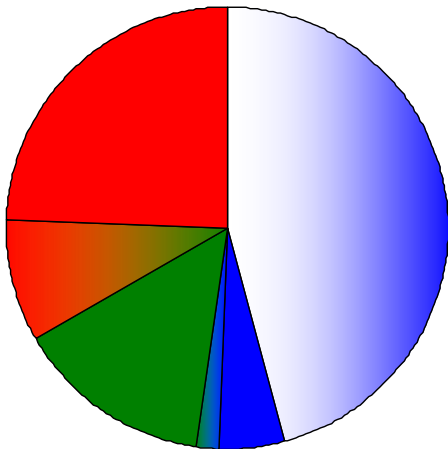
■ 2

■ 3 (medium)

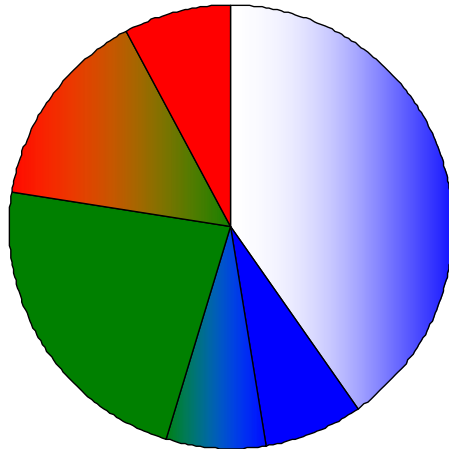
■ 4

■ 5 (high)

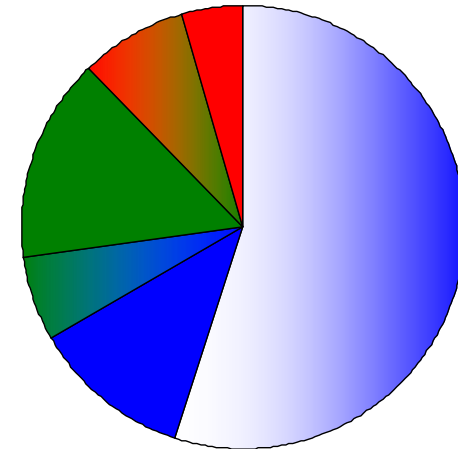
500 mA Operation



port oversubscription and average rating or cure detailed comments from reviewers on prop per beamline



Timing Mode





# Interest in SSRL Operations/Initiatives

	average	N/A
<b>Upgrades to Beam Line Control and Data Acquisition Software</b>	<b>3.40</b>	<b>16%</b>
<b>Future Beam Line Upgrades</b>	<b>3.33</b>	<b>20%</b>
<b>Automation of/Remote Data Collection</b>	<b>3.30</b>	<b>18%</b>
<b>New Instrumentation (CCD, Multi-element Fluorescence Detector)</b>	<b>3.23</b>	<b>22%</b>
<b>User Support after 5 pm, during off-hours, weekends, holidays</b>	<b>3.09</b>	<b>18%</b>
<b>Beam Line Staffing</b>	<b>3.04</b>	<b>24%</b>
<b>Increasing beam stability from accelerator</b>	<b>2.81</b>	<b>26%</b>
<b>Improve brightness</b>	<b>2.51</b>	<b>30%</b>
<b>Top-off Injection</b>	<b>2.49</b>	<b>38%</b>
<b>Online/Off-site Safety Training</b>	<b>2.38</b>	<b>24%</b>
500 mA Operation	2.09	46%
Oversubscription and average rating or cut-off rating per beamline	1.88	40%
More detailed comments from reviewers on proposals	1.73	38%
Timing Mode	1.22	55%

5: high

4

3: medium

2

1: low

# Interest in SSRL Operations/Initiatives

I would like to encourage finer-grained scheduling on the crystallography lines. Since remote-access works so well, it should be possible to request for instance "4 hours of beamtime whenever a slot opens up; I need XX hours advance notice" Perhaps sharing of short-time slots ? Sometimes 2-4 hours are enough for a project, so when people ship crystals in cassettes and they can stay for say 2-3 weeks at SSRL (hoping for some extra beamtime) one could perhaps jump onto a beamline during daytime hours. This would be beneficial when the previous users ran out of crystals and the beamline sits idle from midnight to 2 pm before the next users show up. One could have a webpage where the current users would indicate when they are done with their experiments, then an email is send out automatically to the person(s) responsible for storing crystals and they could call up people who requested to be alarmed when extra beamtime shows up. Just an idea, it surely would demand quite some effort from staff at SSRL to maintain a database with contact information etc. But it might be useful. Alternatively, one could sign an agreement letter, that crystals may be collected by beamline staff whenever time is available. Then the PI would be notified "you have a new dataset". For this to work, one would need to supply SSRL with details on what and how to collect your particular crystal, but that also would be doable.

In order to keep up with the progress in macromolecular crystallography, not only does SSRL require additional funding, but also more detailed comments from reviewers on the proposals submitted. Cursory or incomplete comments are seldom useful in making changes.

Blu-Ice + SAM desperately needs automation.

Why are we still waiting for 500 mA??

Adding more servers for remote data processing and structure determination would help a great deal.

SSRL should focus on advances in sensitivity/resolution of its spectroscopy beamlines.

"Increasing beam stability from accelerator" would be my definite #1 interest. Our group lost about two shifts during our last visit, with one beam dump lasting ~5 hours. As you can imagine, this is very frustrating to users who get maybe 2 trips per year and have to travel halfway across the country!

usually the beamline performance is great, but we were collecting data before the holiday shutdown and there was a pretty significant problem (since fixed) with the ring stability

equipment is useless if there are no people to maintain it

# Interest in SSRL Operations/Initiatives

Things work really well at SSRL, so it's hard to imagine many improvements.

Wonderful - first class

The equipment and the support staff at SSRL are the best I have ever seen at a synchrotron facility. I have pretty much been to all the synchrotron sources in the planet and have collected data. In my opinion, none of the other sources can match the enthusiasm and competence I have observed at SSRL. I have also been tremendously pleased at the ability of SSRL to keep up with emerging methodologies in X-ray crystallography. Mike Soltis has done a phenomenal job of staying at the cutting edge. I would also comment on the computational aspects available to the users. Thomas Eriksson has been superb in establishing servers for remote data processing and structure determination.

Our experience with SSRL operations is extremely positive. It is an outstanding facility.

The beamline staff are great!

My experience with the beamline staff and other personnel at SSRL has been excellent.

The comments that I have received on proposals have been useful and sufficiently detailed to help in the preparation of other proposals

Our experience in terms of operation has been extremely positive.

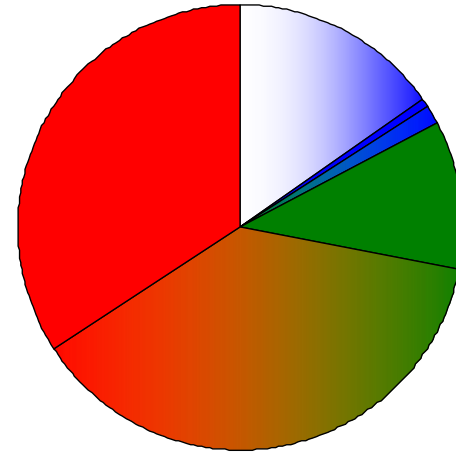
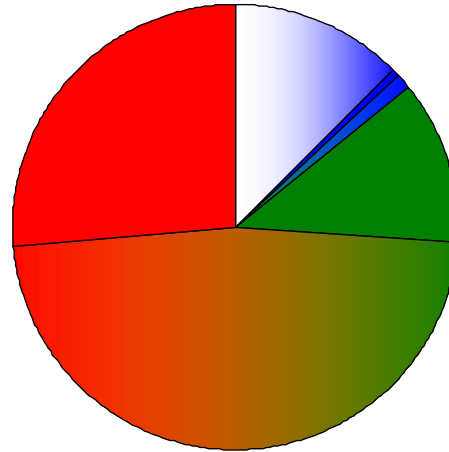
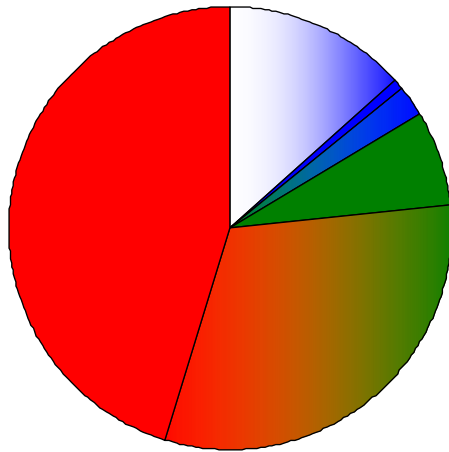
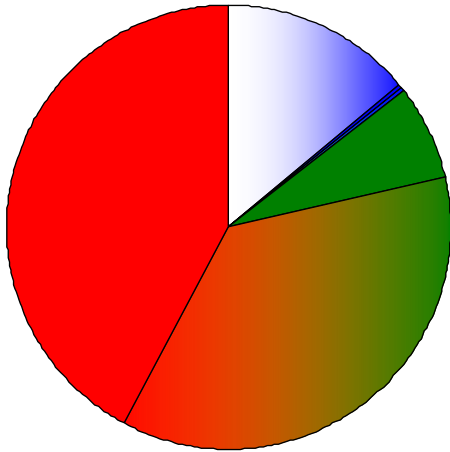
# Degree of Satisfaction with User Resources

Administrative User support by facility staff

Experiment-related user support by beamline staff

Accelerator/Beamline performance

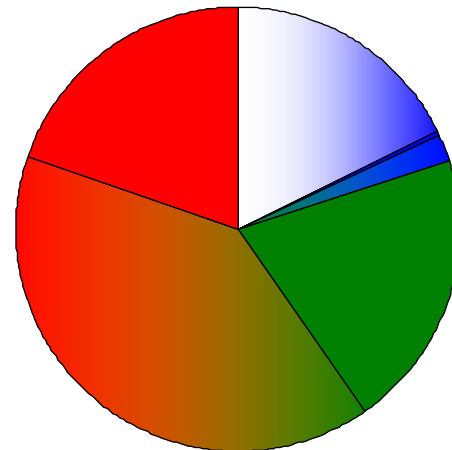
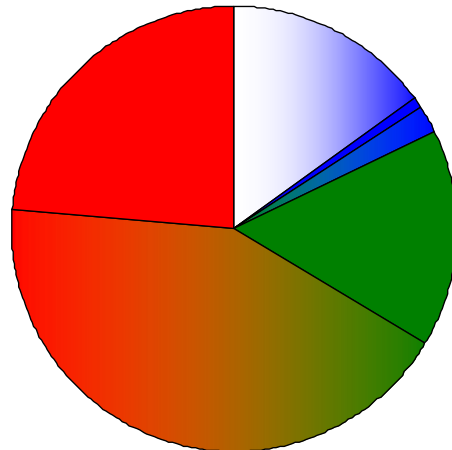
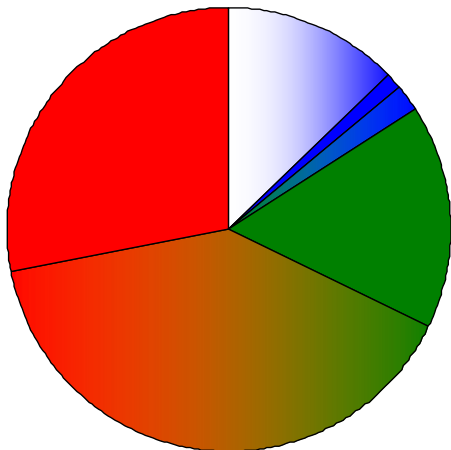
Email Notifications (Deadlines, Forms)



Online User Resources

Shift Duration/Scheduling

Frequency of Scheduled Fills



■ N/A

■ 1 (very dissatisfied)

■ 2 (dissatisfied)

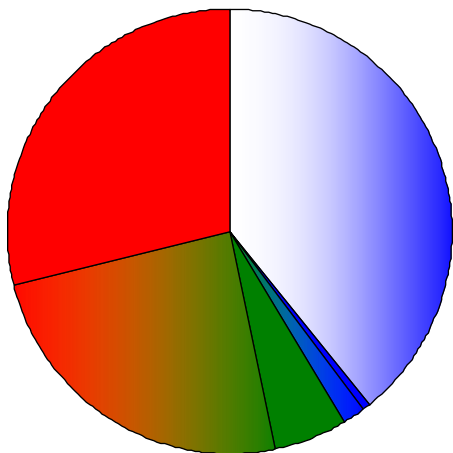
■ 3 (neutral)

■ 4 (satisfied)

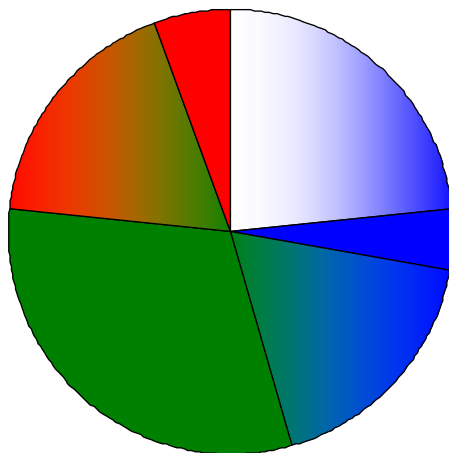
■ 5 (very satisfied)

# Degree of Satisfaction with User Resources

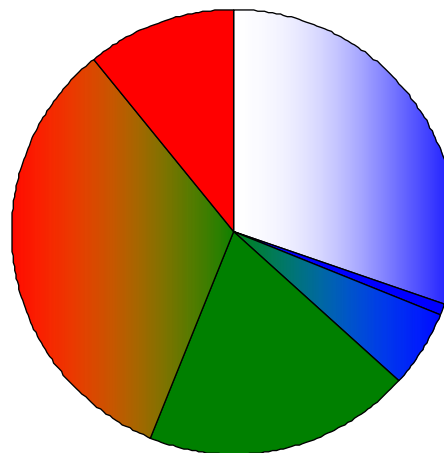
Stanford Guest House



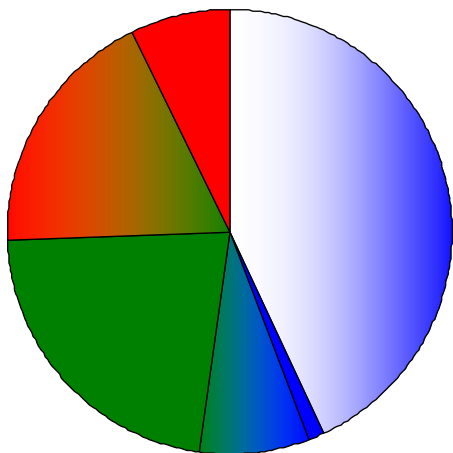
On-site Food Resources



Lab Prep Space



Stockroom Inventory



■ N/A

■ 1 (very dissatisfied)

■ 2 (dissatisfied)

■ 3 (neutral)

■ 4 (satisfied)

■ 5 (very satisfied)

# Degree of Satisfaction with User Resources

	average	N/A
<b>Administrative User support by facility staff</b>	<b>3.79</b>	<b>14%</b>
<b>Experiment related user support by beamline staff</b>	<b>3.78</b>	<b>13%</b>
<b>Accelerator/Beamline performance</b>	<b>3.61</b>	<b>13%</b>
<b>Email Notifications (Deadlines, Forms)</b>	<b>3.58</b>	<b>15%</b>
<b>Online User Resources</b>	<b>3.54</b>	<b>13%</b>
<b>Shift Duration/Scheduling</b>	<b>3.41</b>	<b>15%</b>
<b>Frequency of Scheduled Fills</b>	<b>3.23</b>	<b>18%</b>
<b>Stanford Guest House</b>	<b>2.62</b>	<b>39%</b>
<b>Lab Prep Space</b>	<b>2.56</b>	<b>30%</b>
<b>On-site Food Resources</b>	<b>2.32</b>	<b>23%</b>
Stockroom Inventory	1.93	43%

5: very satisfied 4: satisfied 3: neutral 2: dissatisfied 1: very dissatisfied

# Degree of Satisfaction with User Resources

The SMB web pages are really badly organized! The SSRL web site is horrible to navigate. Poorly intuitive organization.

SSRL needs a modern proposal system; I've been chastised for not using proper online forms that don't exist. Perhaps an online schedule would be useful that allows for detector changes and so on.

the guest house is becoming too expensive; it is often difficult to get a room at the guesthouse; unable to get guest house time because it's full of people who are not associated with SLAC; Rooms at the Guest House are more elaborate and more expensive than we would like; As far as the Guesthouse goes: there should be rooms with multiple SINGLE beds so that people in different can share a room. The reservation experience has been very frustrating, with rudely asked questions beyond what should be necessary to divulge; There needs to be more double rooms at the Guest House; The Guest House has been a very major convenience when running experiments around the clock. I can not say enough how Guest House has boosted the productivity and effectiveness of my use of beamlines when visiting from out of town; Guest House was sold out; Stanford Guest House prices are high; The guest house rarely have vacancies; Regarding the Guest house Beamline guests should have a priority versus Football Game or other Stanford events - at least one room per group should be blocked to allow somebody for quick access close to the beamline; Guest house is great, but occasionally it is hard to get a reservation. Perhaps some additional rooms could be reserved for SSRL use on busy weekends. Alternatively a SSRL wait list could be developed to give users preference for filling cancelled reservations.

it would be nice if there were a cafeteria that had better hours; Weekend and evening food service would be an additional convenience; Food in cafeteria is quite good. I just wish it were open longer hours so we would not have to waste time going off-site to obtain food at night (dinnertime) or on weekends; Should try to make it so that a car is not necessary ; food times and choices are too limited for that to happen.

different glove sizes in the clean room would be great; I think the scale of user honor bar can be expanded a bit; Wish you had more reliable support regarding cylinder gas ordering and storage; Stockroom equipments are often broken, and not fixed for a long time.

assistance for first time EXAFS users for getting access to curve fitting software. It has not been easy for us to get the best combination of programs from data reduction to final fit.

One thing that I do appreciate that it is possible to show up the morning of when the time starts and you can be ready to go as soon as the beamline is ready, if you are an experienced user. An inexperienced user should probably show up the day before, and I think you might think about some formal program to go through things with the inexperienced user before his/her beamtime starts (for example, could you walk through how to setup an experiment without actually being on the beamline).

Our experience on BL 9-3 is much better than our experience on BL 7-3.

Too much time is being allocated to groups that don't produce very much.

# Degree of Satisfaction with User Resources

Support by the administrative staff (Knotts/Dunn/Robleto) has been excellent.

Both the administrative and user support staff here have been extremely helpful in solving problems and making our beamtime run smoothly. They should be commended for their commitment.

Lisa Dunn is always very helpful.

Notably, Lisa Dunn has done a magnificent job of running the administration aspects, including beam time notification, assignment, orchestration, etc. This is an incredibly important achievement and she needs to be commended for this.

I am really impressed by the efficient management by facility staff (Kathy, Michelle, Jackie) as well as beam line scientists (Donghui, Rob).

This is the best facility to collect data

The staff is wonderful and very helpful.



# SSRL Users' Meeting: interest in workshops

Small-angle X-ray scattering (biological/material focus)	48%
NEXAS/EXAFS data analysis	39%
Specialized macromolecular crystallography workshops	35%
Time-resolved facilities	30%
XAS sample prep and data collection	30%
Instrumentation/automation/software development	23%
Beam time proposal writing workshop	22%
High-resolution photoemission spectroscopy	22%
RIXS and advanced spectroscopy	18%
STXM microscopy	18%
Synchrotron radiation techniques for undergraduates	17%
Detector improvement, energy dispersive detector	14%
Scientific advocacy	11%
High-pressure experiments and related techniques	8%

# SSRL Users' Meeting: interest in workshops

More hands on workshops; Hands on operation; Procedures on crystallographic data reduction/processing using various software on data collected at SSRL; macromolecular crystallography workshops (theory and practice) between June and August (not Sept-Oct); high-throughput, automated structure determination; data analysis workshop on a more regular offering throughout the year or in the summer - I'd send students; microfocus; ultrahigh resolution X-ray crystallography

Workshops on NEXAS/EXAFS data analysis; very interested in an EXAFS group or workshop.

Time-resolved studies and inelastic spectroscopy; ultrafast imaging; LCLS related workshop; future use and power of the free electron X-ray laser

Accelerator physics

synchrotron related techniques for undergraduates

science based workshops: catalysis research using synchrotron techniques

Assessment of samples while being heated; Workshop on in-situ experiment and cell design and execution would be nice to see.

on effects of focused beams and high beam intensity on detector linearity and the effective repeatability for EXAFS and other spectroscopies.

encourage more mixing of speakers and attendees during mixers

Also, my personal opinion is for newcomers to be paired with someone who is experienced; workshops to me are not worth the investment of time or money. It is much better to just do your samples, and have someone right there (one to one) who shows you what to do or not what to do.

maybe the work shop online (or web conference or online live conference) might help further facilitate people who are interested in the work shop but live far away.

It is too expensive for me to come to a workshop; you are looking at (with food/lodging etc.) \$1000 or so.

# Last Year SSRL Users' Meeting

I liked the format of highlighting the strengths and weaknesses of each beam-line and the capabilities available on each beam-line to get more information about the materials. Simple and concise.

Comment on the workshop 'Introduction to the synchrotron radiation techniques' last year: The audience was very limited partly because it was held on Sunday and its advertisement was not enough. It would be nice to have a workshop on Stanford campus on weekdays. Also better to send more notices to each natural science departments on campus. This may invoke the interest of the future SSRL users who is not familiar with synchrotron radiation techniques and strengthen the relationship between SSRL and Stanford university; lack of training for graduate students regarding data analysis

The xas short course for structural molecular biology applications was the best course; The current program of periodic XAS workshops focussing on biologically relevant aspects is good, given staffing/funding constraints, moreso in view of the increasing focus of the corresponding NSLS workshop on materials science.

very favorable for microfocused techniques workshop

The last years users meeting had too many workshops (parallel) which made it somewhat hard to attend all the interesting talks.

very useful but the workshop could be more extensive and well prepared: softwares compatibility with Mac

I attended a Biological Small-angle X-ray Scattering Workshop which was an excellent experience.

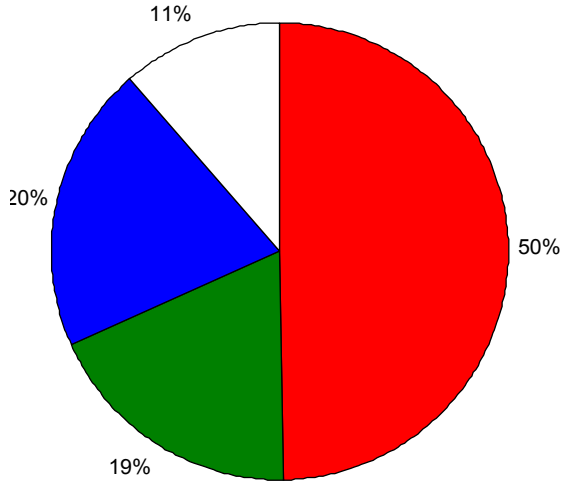
SAXS portion of summer school could have used a section on using pre-existing pdb's with SAXS data

The SSRL Scattering Workshop this past year was excellent, and I plan to attend again if the event is held. I hope that even more detail in experimental techniques and their applications, and data analysis and interpretation can be given.

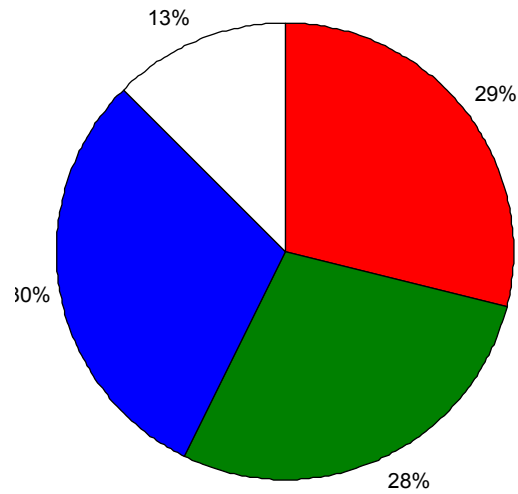
several times I wanted to attend sessions that were simultaneous and had to make hard choices about which ones to go to.

# User Advocacy

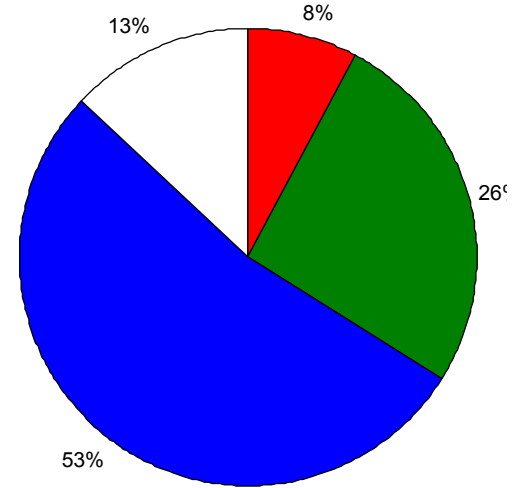
Sending an Email to your Representative (224 contacts)



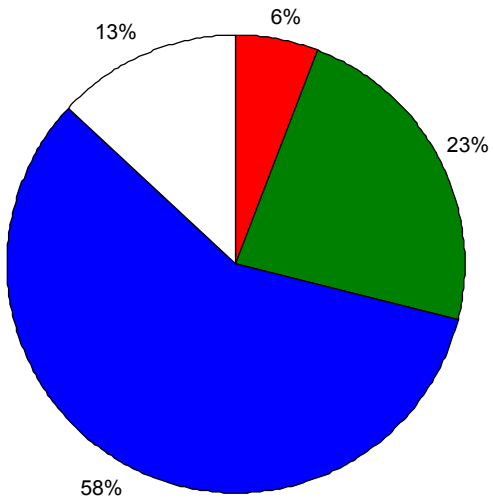
Mailing a Letter to your Representative (186)



Visiting your Local Congressional Office (113)



Participating in Advocacy Activities in Washington, D.C. (93)



Arranging a Group Visit to your Local Congressional Office (86)

