ATAP All-Hands Meeting

Wim Leemans
Division Director
Accelerator Technology & Applied Physics
July 28th, 2016
Today’s Agenda

- **Our People**
  - Welcoming New Colleagues
  - Recognizing Accomplishments
- **Science and Technology Highlights**
- **Operations Update**
  - Outreach and Diversity
  - Communication
  - Safety
- **Picnic!** (Noon, Codornices Park)
First, A Minute for Safety: Preventing Slips, Trips, and Falls

• Slips, Trips, and Falls = #2 injury cause at LBNL in FY16
  o 6 recordable slips & falls Lab-wide; 1 ATAP first aid
• Greatest risk: stairs, wet surfaces, construction zones
• Prevention:
  o Be aware of walking surface, avoid distractions
  o Watch for signs and changes in construction zones
  o Use handrails
  o Wear appropriate shoes
• If you fall, report it immediately
Our Progress Is Made Possible By Our People
ATAP Works With a Significant Fraction of Matrixed Engineering Personnel As Well As Students And Postdocs

*Operations includes Finance/Business Development – Proposals/ EH&S/HR/Admin/Communications/ Outreach, Education and Diversity

**FY 15**
Total Headcount = 167
Total FTE count = 127

- Scientists, 46
- Engineers, 22
- Technicians, 35
- Students/GSRAs, 28
- Post docs, 12
- Operations, 10
- Project controls, 1
- Affiliates, 13

Typically 25-30 students and up to 20 postdocs each year
Senior and staff scientists are leaders in their field and attract top talent
We work with many divisions at LBNL and domestic and overseas labs/institutions
Welcome to the Recent Additions to the ATAP Division (since January 2015)

Samuel Barber
BELLA
Nov. 2015

Lucas Brouwer
SMP
June 2015

Stepan Bulanov
BELLA
June 2015

Kyung Ryun Hwang
CBP
June 2016

Serena Persichelli
CBP
May 2016

Emmanuele Ravaioli
SMP
Nov. 2015

Tengming Shen
SMP
October 2015

Hai-En Tsai
BELLA
Aug. 2015

Yawei Yang
CBP
Oct. 2015

Liyang Ye
SMP
January 2016
Two new 2016 awardees brings ATAP’s Early Career Research Program projects to a total of four

- Prestigious and competitive Office of Science program
- Within 10 years since PhD

2016
Chad Mitchell,
*Compensation of Non-Linear Space Charge Effects in Accelerator Lattices*
Center for Beam Physics

2016
Jeroen van Tilborg,
*A Compact Laser Plasma Accelerator Based FEL for Ultrafast Hyperspectral Experiments*
BELLA Center

2014
Daniele Filippetto,
*High Repetition Rate Ultrafast Electron Diffraction*
Center for Beam Physics

2012
Tengming Shen,
*Engineering High Field Superconducting materials for Frontier Accelerators*
BCMT
Other Recent Major Awards

ELI 2016 Wolfgang Sandner
Scientific Excellence Prize for Young Researchers:
Henri Vincenti, 2016

American Physical Society Nicholas Metropolis Award for Outstanding Doctoral Thesis Work in Computational Physics: Rémi Lehe, 2015*

LBNL Director’s Award for Exceptional Achievement: Christoph Steier (r.), ATAP, and Arnaud Madur, Engineering, on behalf of the ALS Brightness Upgrade Team, 2015

IEEE Council on Superconductivity Award for Continuing and Significant Contributions in the Field of Applied Superconductivity Shlomo Caspi, 2016

Society of Vacuum Coaters Nathaniel H. Sugerman Memorial Award:
André Anders, 2016

US LHC Accelerator Research Program Toohig Fellowship:
Emmanuele Ravaioli, 2015

US Particle Accelerator School Iron Man Award
John Byrd (r., receiving award from W.A. Barletta), 2016

* For work performed at École Polytechnique prior to LBNL appointment
Five-Year Service Milestones, CY15-present

10
Gang Huang

15
Qing Ji
Soren Prestemon
GianLuca Sabbi
Carl Schroeder
Fernando Sannibale

20
Tom Scarvie
Thomas Schenkel
Derun Li

25
Dan Dietderich

30
Bernhard Ludewigt
Hiroshi Nishimura
Rob Ryne
Peter Seidl

Thanks to everyone for helping make ATAP and LBNL a workplace where good people find enduring satisfaction and opportunity.
ATAP All-Hands Meeting

Status and Strategies
ATAP has Major Role in Two Labwide Strategic Initiatives (from Director Witherell’s DOE Annual Lab Plan presentation)

**Advanced Light Source Upgrade**
Rebuilding the world’s leading soft X-ray light source to deliver truly coherent beams at record flux

**Exascale for Science**
Thousand-fold expansion of computing capability to transform many fields of science

**Microbes to Biomes/Biocampus**
Harnessing microbial communities for game-changing advances/
Establishing the world’s leading center for study of how biology and the environment interact

**Advanced Cosmology**
Experiments in dark energy, dark matter, and cosmic microwave background to understand the universe

**Accelerators for the Future**
Developing ultra compact accelerators and advanced magnets

**Developing Energy Technology Innovations for a Sustainable Future**
Market translation for entrepreneurial energy technologies
ATAP Strategy Has Three Key Elements

- **Contributing to today’s national and international priorities**
  - DOE-BES: LCLS-II (gun, undulators, modeling)
  - DOE-HEP: LHC (magnets, modeling, RF feedback), LBNF with PIP-II
  - DOE-NP: FRIB (magnets, ECR sources)

- **Strengthening and reinventing our facilities**
  - ALS -> ALS-U
  - BELLA -> Part of national roadmap for advanced accelerators, including k-BELLA and BELLA-i initiatives

- **Discovery science and technological innovation**
  - Advanced accelerators and radiation sources
  - Advanced magnets
  - Discovery plasma science
  - Applications
We are Partner Of Choice for Current Major National and International Priorities/Projects

A few examples...

Prototype LCLS-II undulator in magnetic measurements facility

LCLS-II prototype APEX Injector Gun

LCLS-II Beam dynamics modeling

Timing and feedback

And Magnets...
APEX Demonstrates Major LCLS-II Milestones

All formal beam dynamics requirements for LCLS-II demonstrated with margin

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Required</th>
<th>Measured</th>
<th>Demonstrated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge per bunch [pC]</td>
<td>&gt; ~ 20</td>
<td>20-25</td>
<td>😊</td>
</tr>
<tr>
<td>Normalized emittance [mm]</td>
<td>&lt; ~ 0.25</td>
<td>~ 0.20*</td>
<td>😊</td>
</tr>
<tr>
<td>Bunch peak current [A]</td>
<td>&gt; ~ 5</td>
<td>5 - 9</td>
<td>😊</td>
</tr>
<tr>
<td>Energy Spread (H.O. whole beam) [keV]</td>
<td>&lt; ~ 15</td>
<td>&lt; 9**</td>
<td>😊</td>
</tr>
</tbody>
</table>

* After accounting for space charge contribution
** Value affected by space charge. Much smaller values at LCLS-II injector energies.

Fabrication of the new VHF-Gun for the LCLS-II injector initiated at LBNL shops

APEX Phase-II Fully Installed in the BTF
APEX Opens Up New Directions and Opportunities

APEX: a unique injector facility for testing
- High brightness beam dynamics studies for FEL UED, ... applications
- Cathodes for FEL, UED, UEM applications
- Exotic insertion device schemes (HTC tape undulator ...)
- Plasma lenses
- Inverse Compton scattering, THz, IR FEL production schemes
- Diagnostics systems for extremely low charge and/or high repetition rate

HiRES-U: Ultrafast beams at high repetition rates for science and technology R&D
- Femtosecond electron-laser synchronization
- Sub-femtosecond generation of laser and electron pulses
- Large bandwidth diagnostic tools with attosecond-nanometer accuracy
- Nano-sized electron beams for nanodiffraction and imaging
- Gas/droplet injectors for chemistry and biology experiments
The HiRES Beamline Has Been Fully Installed, and e⁻ Beam Commissioning Started

Beam measurements on the UED line:
1) Beam emittance at the detector for small Q
2) Gun amplitude jitter through beam energy
3) Test diagnostic or ultralow charge beams (10 fC)
4) Measured monochromated beam at the viewscreen as function of slit aperture

\[ \Delta E/E = 1.4 \times 10^{-4} \]

80 nm @ 2pC
Rigorous Undulator Validation Program Coming to Fruition

- SXR pre-production unit completed
  - Magnetic measurements at LBNL this summer
- Production contracts awarded
  - First undulator delivered to SLAC winter 2016
  - Last undulator delivered to SLAC spring 2018
- HGVPV design completed
  - Pre-production unit in fabrication
  - Magnetic measurements at LBNL this fall
- Production contracts being finalized
  - First undulator delivered to SLAC summer 2017
  - Last undulator delivered to SLAC summer 2018
MaRIE at LANL Could Become Another Major FEL Initiative
Where ATAP Can Contribute

- **MaRIE (Matter-Radiation Interactions in Extremes) received CD-0**
  - Fills gap in fundamental understanding of materials important for key National Nuclear Security Administration (NNSA) missions
- **Challenging machine design**
  - X-ray pulses from 4 to 42–60 keV, $5 \times 10^{10}$ ph/pulse, bandwidth $< 2 \times 10^{-4}$
  - 12 GeV superconducting linac
  - 0.1 nC, $\leq 0.2 \mu$m emitt. (norm.), $\leq 0.015$ % slice energy spread
- **Mutual interest in developing LBNL roles:**
  - Multiphysics, high-resolution modeling
  - Superconducting undulators
  - Hybrid (SC- and permanent-magnet) undulators
  - Low-level RF

**MaRIE Timeframe: CDR within ~2 years**

We built a similar RFQ as a SPP in China in 2015. Saved over $1M for PIP-II RFQ. Delivers a world record >11 mA proton current.
We Provide Many Contributions to LARP, and the LHC HL-AUP has received CD-0!

- Significant contributions on multiple fronts:
  - Crab cavities
  - Beam-beam modeling
  - Magnets:
    - Successful test of the final model magnet
    - Clear LBNL roles as we proceed towards a project
      - Responsible for all US cables
      - Responsible for all US magnet assemblies

Beam-beam simulations show impact of cavity noise on luminosity
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Advanced Light Source &
ALS-Upgrade
Major Progress on Near Term ALS Upgrades

COSMIC EPU

LEDAM Undulator for GEMINI: extending undulators to harder X-rays

Accelerator component upgrades

Nonlinear storage ring injection kicker
The Advanced Light Source Upgrade

- **ALS** is now the most productive source in the world for soft x-ray science

- **ALS-U** will provide orders of magnitude more coherent flux
  - The ALS-U design is based on the multibend achromat lattice that is being adopted by all new and upgraded facilities.
  - High coherent flux will make it possible to resolve nanometer-scale features and interactions and will allow real-time observation of chemical processes.
ALS-U: Designed to be the World’s Highest Coherent Flux Soft X-ray Synchrotron Light Source

Major Upgrade of the ALS

Highest Coherent Flux

ALS-U will not be surpassed by any currently envisioned storage ring technology
Excellent Progress On Accelerator R&D and Pre-Project Development; Awaiting CD-0

Very small NEG coated vacuum chambers

Coated 6 mm chamber (world record)

Magnets – SR Production

Developing Superbend options

On-axis Injection – Fast pulsed magnets

0-100% rise ~ 5.4 ns

Physics Design Optimization

Harmonic Cavities - Transients

Achieved needed bunch lengthening with ALS-U bunch trains in ALS (3HC)

“Absolutely central... Ready to initiate construction”
—BESAC subcommittee

“Highest priority project at the Laboratory”
—LBNL Director Witherell

Proposal submitted Awaiting CD-0 approval
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Advanced Ultra-Compact Accelerators
A Roadmap for Future Colliders Based on Advanced Accelerators Contains Key Elements for Experiments and Expansion of BELLA

- DOE Workshop resulted in national strategy report

- Key elements for laser based approach over next 10 years:
  - 10 GeV module: builds on 4.3GeV result on BELLA from 2014 (W.L. et al., PRL2014)
  - Staging-2.0 on BELLA: builds on successful staging demonstration on TREX laser (Steinke et al., Nature 2016)
  - High average power demonstrator
  - Radiation sources:
    - FEL
    - Gamma ray source
Compact Accelerator Based Initiative was a Finalist at DOE’s Big Idea Summit in Washington on April 21-22, 2016

- Stuart Henderson (ANL) & W.L. (LBNL)
- Multi-institution partnership
- SC’s Office of High Energy Physics (HEP) and Basic Energy Sciences (BES) are evaluating a potential over-target request for FY18
Expansion Of BELLA Facility for Laser Plasma Accelerator R&D and Applications Is Being Planned

1. k-BELLA
   (High average power)
   for scaled collider module, FELs, gamma ray sources

2. BELLA-i beamline
   (Ultra-high intensity)

3. 2nd BELLA beamline
    (Staging expt)

4. Current BELLA

5. Gamma-rays, FELs, medical apps

6. DNN

+DOE-BES
High Energy Compact Accelerators Open New Applications But Require Higher Average Power

**Industry and Science**
Bright, compact photon sources

**Security**
Compact high energy photon sources for detecting special materials

**Medical**
Arthroscopic accelerators for medical treatment and inspection

Need to go from hours to seconds

Cargo scanning needs 1000x more power

Performance demo is underway

Key Challenges to be overcome:
Engineering for stability, tunability, and reliability and 100x higher average power using new laser technology
Free Electron Lasers Driven by Laser Plasma Accelerators is funded by Moore Foundation and ECRP from DOE-BES

- New 100 TW laser
- New lab built
- BNL’s VISA undulator
- New concepts will be tested
- Start-to-end transport & FEL simulations

van Tilborg et al., PRL 115, 184802 (2015)
Compact Mononenergetic MeV Photon Source: Improve Nonproliferation/Security Performance & Dose

- **Dedicated LPA-based system**
  - Laser guiding & shaping
  - Deceleration proven on staging – reduce shielding
- **Application**
  - Monoenergetic, narrow divergence for radiography, photofission and nuclear resonance fluourescence
- **New facility**
  - Laser room complete, B & L caves, target systems, HVAC and interlock on track
  - Mechanical design complete, in fabrication
- **New laser – 100 TW, 5 Hz**
  - Front end operating, pump laser delivered, amplifier build in progress
  - Same design for FEL line
- **Experiments FY17 through FY19**
  - Control photon energy, energy spread, and flux
ATAP All-Hands Meeting

Advanced Magnet Technology
With the Berkeley Center for Magnet Technology, We Are Organized to Meet the Commitments and New Challenges

- Synergy and resource coordination – Alignment with DOE priorities

Berkeley Center for Magnet Technology
S. Gourlay, Director
R. Schlueter, Deputy

Advanced Concepts and Materials
S. Prestemon

SC Accelerator Magnets
S. Gourlay

Magnets for Light Sources
R. Schlueter

Testing/QA
TBD

Production/Projects
D. Leitner
In November 2015, DOE appointed LBNL as Lead Laboratory for High Field Magnet R&D

- In response to P5 and HEPAP subcommittee report
- Increasing the performance of magnets and reducing their cost through advanced concepts and our know-how
- Initial Participants: LBNL, FNAL, FSU/NHMFL
Canted Cosine-Theta Superconducting Dipoles: Potential for Cost-Effective High-field Accelerator Magnets

*First demonstration of Nb$_3$Sn with this geometry*

- 1 m NbTi prototype tested reached 90% of short-sample field
- 1 m Nb$_3$Sn prototype tested
  - Reached 75% of short sample (likely due to cable damage)
  - Groove design has been modified to reduce damage risk
  - Preparations for next prototype are under way
- Excellent agreement between measured and calculated field
- State-of-the-art instrumentation, including acoustic sensors and quench antennas, has been implemented in testing

**Measured Sextupole Component**

**CCT Inner and Outer Layer Mandrels**

**Modified Groove Design**

**Nb$_3$Sn CCT Dipole Magnet**
Development of Accelerator Magnets Based on High-temperature Superconductors: Potential for a Breadth of Applications

- **Bi-2212 material:**
  - Demonstrate high critical current density in Rutherford cable in a coil environment
  - Explore the mechanical and quench limits of Bi-2212 coil technology
  - Proof-of-principle fabrication of CCT dipoles

- **REBCO material:**
  - Develop fabrication technologies for subscale magnets
  - Test magnets to provide feedback to conductor and magnet technology

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X. Wang et al.

Winding-test fixtures for CORC® wire and tape stack
We Are Developing a Superconducting Gantry Magnet for Medical Therapy to Dramatically Reduce Gantry Weight and Size

- HEP Stewardship grant to develop superconducting magnet technology for medical gantries
  - Collaboration between LBNL, Varian, and PSI
  - Motivation: reduce weight by ~x10, reduction in size
- Optics design results in dp/p~25% acceptance
  - Less/no ramping facilitates superconducting technology
  - May enable new treatment modalities

W. Wan et al., PRSTAB 18, 2015
Nb$_3$Sn Superconducting Undulator R&D Yielded Excellent Trajectory, First Demonstration of Active Phase-Error Correction

- 1.5 m Nb$_3$Sn SCU prototype fabricated at LBNL and tested at ANL
  - Fast quench protection system developed
  - Individual coils reached 95% of design current
  - Good field quality was measured at ANL
  - Field correction method was successfully tested
  - Maximum current achieved at ANL test was ~70% of the design value (possible damage)
- Dewar test with full undulator configuration will be performed at LBNL after replacing damaged coil

1.5 m Nb$_3$Sn Superconducting Undulator
Other New Initiatives
**We Have Proposed Three Pillars of Activities to Fusion Energy Sciences in Three Key Areas Relevant to their Mission**

<table>
<thead>
<tr>
<th><strong>Discovery Plasma Science</strong></th>
<th><strong>Burning Plasma Science</strong></th>
<th><strong>Magnets for Fusion Reactors</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• High energy density laser plasma physics</td>
<td>• Structural evolution of fusion materials</td>
<td>• High Temperature Superconductors for Fusion Reactors</td>
</tr>
<tr>
<td><img src="image" alt="Fundamental physics of relativistic plasmas with BELLA-i" /></td>
<td><img src="image" alt="Pulsed plasmas at 10MW/m² + in situ Ultrafast Electron Diffraction" /></td>
<td><img src="image" alt="20 T magnets" /></td>
</tr>
<tr>
<td>• General Plasma Science</td>
<td>• Pulsed plasmas at 10MW/m² + in situ Ultrafast Electron Diffraction</td>
<td>• 20 T magnets</td>
</tr>
<tr>
<td><img src="image" alt="Self-organization in magnetron plasmas" /></td>
<td>• Pulsed ion beams to access the time domain of radiation damage</td>
<td>• Leverages Magnet Development Program from HEP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• FWP submitted</td>
</tr>
</tbody>
</table>
The BELLA-i Initiative For High Energy Density Physics Has Now Taken Off With Phase 1 Funding From DOE-FES

- We have received Phase 1 funding for experiments with solid targets at BELLA
- BELLA-i team with Sven, Qing and Stepan working a start-up LDRD
- Great community feedback and support at APS Division of Plasma Physics satellite meeting (Nov. 2015) and at our BELLA-i workshop, Jan. 2016
We Have Achieved Single Shot Melting and Fracturing of Foil Targets With Ion Pulses at NDCX-II, Steady Progress in Beam Fluence

- 300 nm Tin (Sn)
- 4 nC, 6 ns (FWHM)
- 2.5x10^{10} ions/pulse
- E_{kin} = 0.8 MeV He^+
- 40 mJ/cm^2
- FY16 goal: >1 J/cm^2
MemS Based Ion Beams for Fusion

- Ion beams are promising drivers for magnetized target fusion
- Delivering the required MJ of ion beam energy in short pulses is challenging
- We are exploring MEMS based multi-beamlet ion accelerators that could be scaled to very high peak power

We have demonstrated RF ion-acceleration and focusing, the basic building blocks of a multi-beam MEMS based accelerator
ATAP is in the Process of Forming Two New Programs

- **Motivation**: Better alignment of existing CBP activities with HEP GARD priorities
- **Opportunity**: We see these two groups as new opportunities for Berkeley to lead
  - Accelerator modeling can lead in adapting and creating codes for exascale computing.
  - RF/Instrumentation can combine resources from ATAP/Eng to address new accelerator technology challenges within and outside Berkeley Lab.
- John Byrd and Fernando Sannibale have been tasked with developing a strategic vision for instrumentation at LBNL – Talk to them if you are interested!
Innovative Laser Concepts Using Coherent Pulse Stacking, Spectral Combining and Beam Combining are Pursued

LBNL, LLNL, U Michigan partnership
Funded through DOE Stewardship

Also: A. Tunnerman/J. Limpert et al.; U. Keller et al., and several other groups
Architecture of 3J, 30fs, 1kHz Fiber Laser

- stretched pulse train from front end
- spectral splitter, 1x16
- temporal stacker, 81x1
- compressor
- amplifier array, 256
  16 per λ
- spatial combiner, 16x1
- spectral combiner, 16x1

Extract 12mJ per amp X 256 = 3J
Success in Optical Pulse Stacking Shows Promise towards High Average Power Ultrafast Lasers

- Two cavities show excellent locking over long time periods
  - ~2.5° optical phase (RMS)
  - Correction of optical cavity length of ~120° with A/C cycle
- Funded by the Accelerator Stewardship program
Modeling Activities: *Cutting-Edge Computing*, Support of Major Research Activities and Facilities

Continue pushing state-of-the-art in accelerator computing:
- Extensions of capabilities: IMPACT, Warp, INF&RNO and BeamBeam3D
- New module PICSAR - developed with NERSC Exascale Applications Program
- New GPU module FB PIC - developed with DESY
- New algorithms: spectral solvers in 3-D and R-Z, vectorization, Galilean solver, …

New “Galilean” solver cures numerical Cherenkov
(collab. DESY)

New “Galilean” solver cures numerical Cherenkov
(collab. DESY)

Novel vectorization algorithm takes advantage of new Intel manycore architectures

Increasing support in modeling of laser-plasma acceleration and interactions

Modeling key in design and interpretation of staging experiment

Simulations support injection experiment and prepare design of 10 GeV range stage

Simulations influenced and validated design of APEX injector

Engaging in modeling of Beam Beam effects for electron Beam colliders

Ongoing support of LCLS-II and FEL research

Excellent agreement with experiment

With Study of micro-bunching instability Without

Start-to-end optimization leads to 80% more predicted 5keV x-ray FEL radiation energy!
Next Generation of Accelerators *Needs*
Next Generation of Modeling Tools

**Our vision**

- Fast – *runs in seconds to minutes*
- Hi-Fi – *full & accurate physics*
- Link – *integrated ecosystem*

Real-time

- *virtual prototyping* of entire accelerator

with intuitive interface, dissemination & user support.

**Need to expand:**

- Base funding + CAMPA
- LCLS-II, BES, IEC, LARP
- ECRP “Compensation Space Charge in Intense Beams” – C. Mitchell
- Proposal on “Exascale Modeling of Advanced Particle Accelerators”
ATAP All-Hands Meeting

Operations Update
Backup Care Program

The Lab offers backup care through Bright Horizons

Can be used for, e.g.,

- Regular caregiver ill/(pre-)school closed
- Child/adult mildly ill and can’t stay home alone
- Transition between different caregivers
- During conference travel (within the US)

Low cost thanks to Lab subsidy

More info at backupcare.lbl.gov
Diversity in Hiring Task Force

Chaired by Qing Ji, full report available online soon.

Some of the suggestions:

- **Assemble and maintain list** of minority and women scientists in our field(s); use list to advertise open positions (if you want to contribute to the list, contact Ina Reichel)
- **Promote guidelines** regarding neutral language in job postings
- **Provide Diversity and Inclusion checklist** for hiring committees
- **Promote more openness** in hiring process
- **Encourage one-on-one mentoring**
- **Establish regular gatherings**
Improving Our Web Presence

Active, public-facing sites converted to or created in Wordpress
- Examples include ATAP, BELLA, and most recently BCMT (left)
- Forward-looking aesthetic and technical model Labwide
- Nontrivial *conversion* rather than just movement; fortunately expert help is available from Creative Services

Legacy HTML sites move to Labwide server
- Piloted; looks like a low-effort process
- Retire the old lbl-afrd rack server
- Focus our resources on content, not system administration

Major update cycle for ATAP websites during remainder of 2016
- Let’s look at program- and group-level sites too
- Is content up to date and on message? Could appearance use a fresh-up?

*If you can’t remember when you updated a site, it’s probably time*
ATAP Newsletter: Reaching Out to Sponsors, Lab Management, and Colleagues

We use catchy headlines to intrigue readers

For science topics:

Industry average view rate for eNewsletters is about 22%

View rate of ATAP Newsletter was 56% in 2015 and has progressively increased to 72% in FY16

Articles on safety and workplace life important to all audiences

Every other month; occasional special issue

Standard content elements
ATAP Safety in FY16

No major (recordable or lost time) accidents!

Two new Safety Committee members
- GianLuca Sabbi – Superconducting Magnet Program
- Hiroshi Nishimura – ALS Accelerator Physics

A successful Safety Day
- Clean-up
- QUeest
- Management walkarounds
Work Planning and Control:
• 46 approved Activities

Electrical Safety:
• 12 approved LOTO procedures
• Equipment fixes are in progress
• Qualified Electrical Workers are being trained

3 Focus Area Self-Assessments:
• Configuration Control
• Communication of Lessons Learned
• Physical Sciences Multi-Division Incidents
ATAP Picnic

Date: Thursday, July 28, 2016
Location: Codornices Park, 1 Euclid Avenue – Area 1
Starting Time: 12:00 noon
Menu: Tri-Tip, Links, Sausages, Salads, Desserts & Beverages