



Argonne Training Program on Extreme-Scale Computing

Introduction to the ATPESC

Marta García Martínez
ATPESC 2019 Program Director

Q Center, St. Charles, IL (USA)
July 28 – August 9, 2019



Outline

 **Welcome**

 **A few words about Argonne National Laboratory**

 **Motivation of the ATPESC**

 **The curriculum**

 **Logistics and reminders**

WELCOME

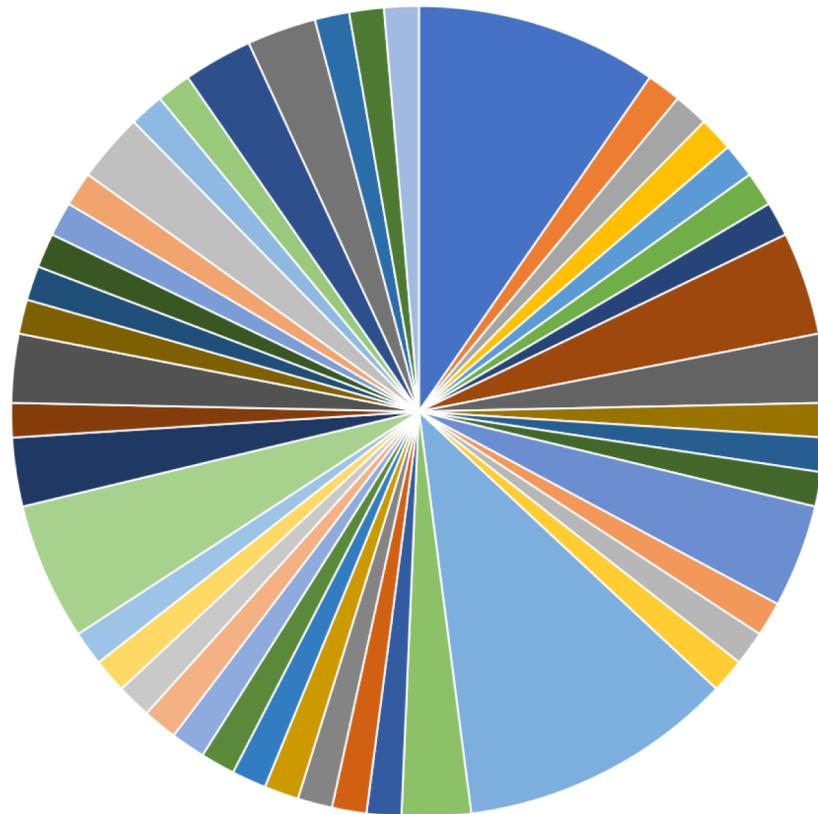
Welcome!

73 ATPESC 2019 Participants

Adiran	Ai	Alberto	Alexander	Ángel Manuel	Anne
Antoine	Arvind	Ashesh	Axel	Bethany	Brian
Casey	Charles	Charles	Chelsea	Chunhong	Daniel
Daniel	Daniel	DivyaSri	Eric	Florence	Gonzalo Miguel
Gurtej	Hsing-Yin	Ilhan	Jacob	Josu	Kelsey
Kevin	Kevin	Kevin	Kevontrez	Kristen	Kristofer
Kyle	Leighton	Logan	Luca	Lucas	Madhurima
Marc	Markus	Matti	Micah	Michael	Miren
Nicholas	Opeoluwa	Peng	Petro Junior	Quan	Revathi
Rosangela	Sara	Satish	Shu-Mei	Shuai	Tanmoy
Tiago	Tomáš	Tosaporn	Trevor	Xukai	Yan
Yinjian	Yu-hsuan	Yunde	Zachery	Zackary	Zechariah
Zhe					

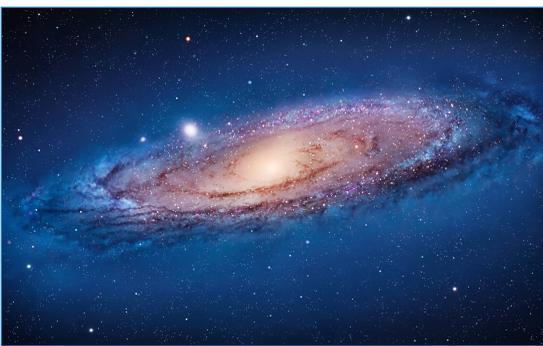
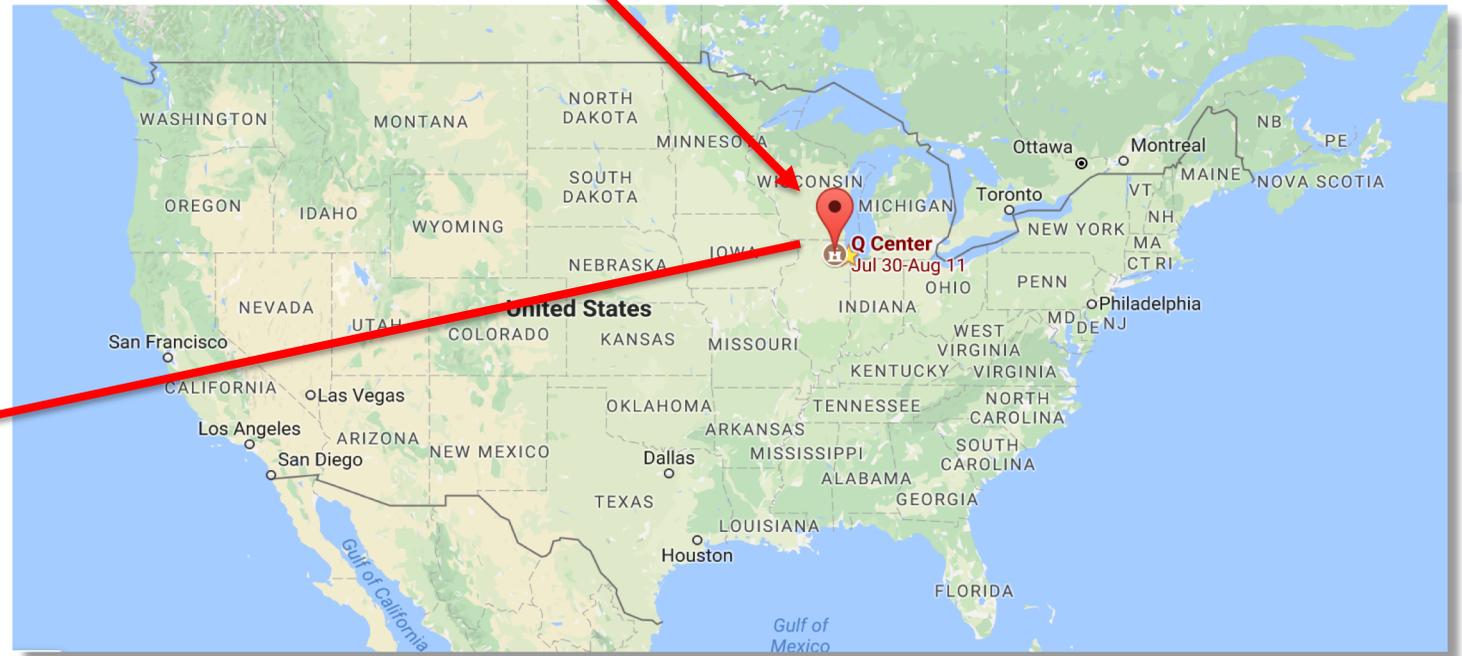
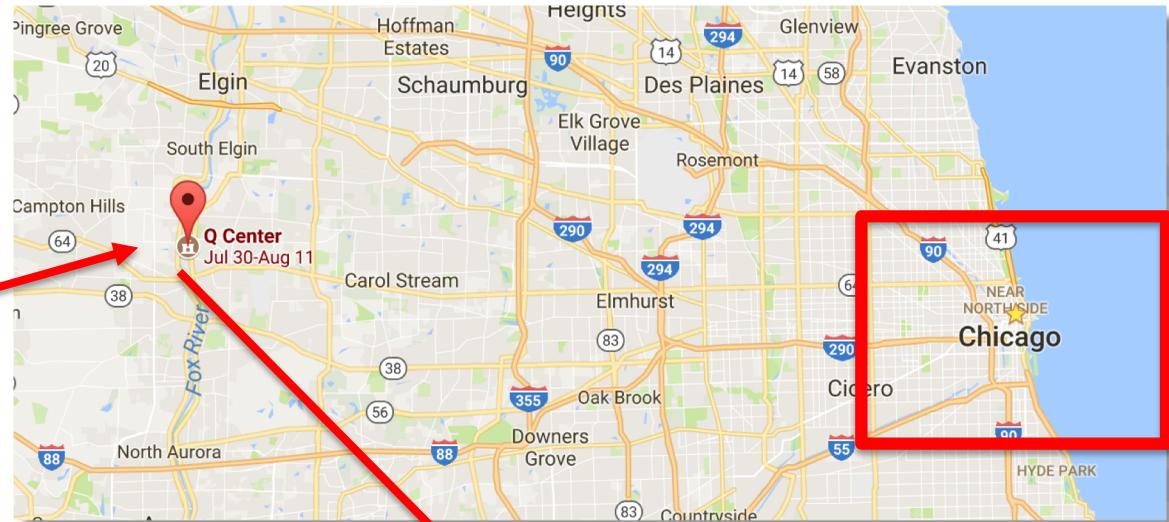
Welcome!

ATPESC 2019 49 Institutions



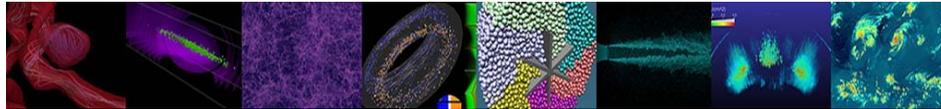
- Argonne National Laboratory
- Brookhaven National Laboratory
- CEA, Saclay
- Duke University
- Georgia Institute of Technology
- Illinois State University
- Iowa State University
- IT4Innovations National Supercomputing Center, VSB - TU Ostrava
- Lawrence Berkeley National Laboratory
- Los Alamos National Laboratory
- Massachusetts Institute of Technology
- NASA
- Naval Nuclear Laboratory
- Politecnico di Milano
- Rensselaer Polytechnic Institute
- Stanford University
- Texas A&M University
- The University of North Carolina at Chapel Hill
- University of California, Berkeley
- University of Cambridge
- University of Colorado Boulder
- University of Illinois at Urbana-Champaign
- University of Michigan
- University of Minnesota
- University of Washington
- BP America Inc.
- Brown University
- Courant Institute of Mathematical Science
- Fermi National Accelerator Laboratory
- Harvard University
- Instituto de Astrofísica de Canarias
- ISAE-SUPAERO
- King's College London
- Lawrence Livermore National Laboratory
- Marquette University
- Michigan State University
- National Renewable Energy Laboratory
- Northwestern University
- Queen Mary University of London
- SLAC National Accelerator Laboratory
- Technical University of Munich
- The Ohio State University
- University of Tennessee
- University of California, Irvine
- University of Cambridge
- University of Delaware
- University of Illinois at Urbana-Champaign
- University of Michigan
- University of Southern California

You are here: **Space** ...



You are here: Time...

 Argonne Training Program on Extreme-Scale Computing



ATPESC
2019

ATPESC
2020

...



ATPESC 2019

- Two-weeks training program
- Once-in-a-lifetime experience
- Conceived as a retreat

A few words about Argonne National Laboratory

Argonne – a part of DOE National Laboratory System

Office of Science Laboratories

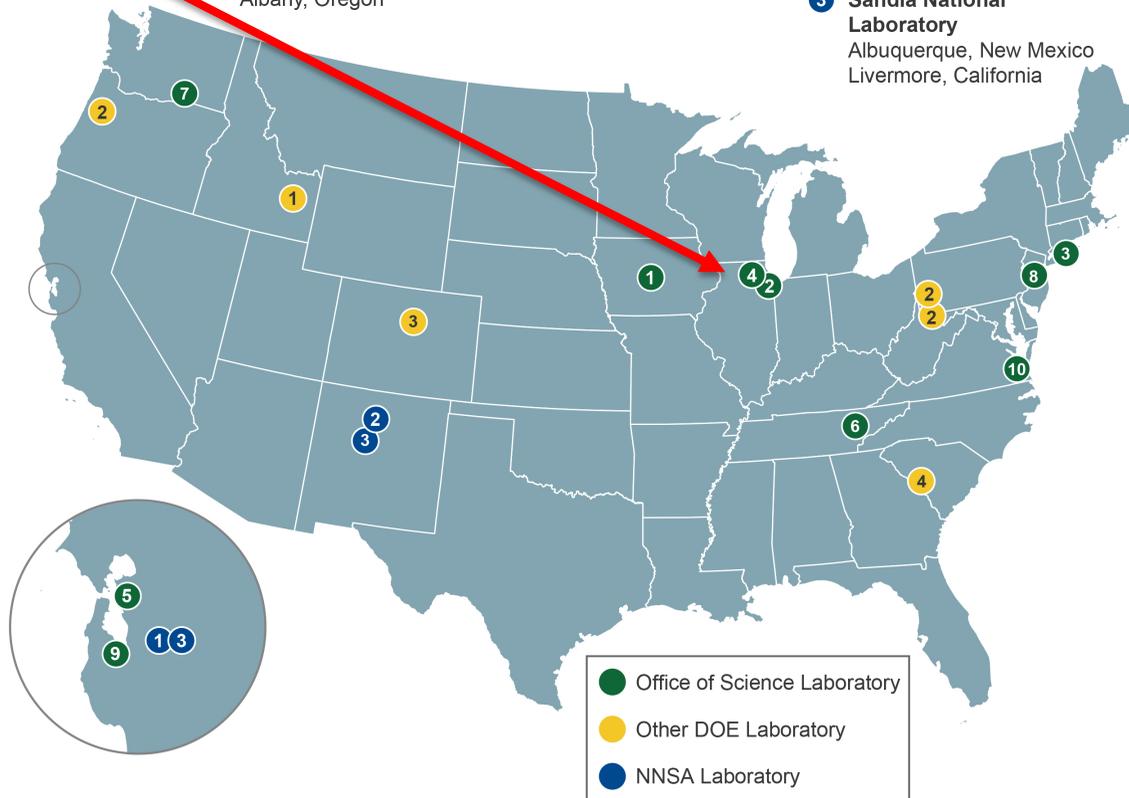
- 1 Ames Laboratory
Ames, Iowa
- 2 Argonne National Laboratory
Argonne, Illinois
- 3 Brookhaven National Laboratory
Upton, New York
- 4 Fermi National Accelerator Laboratory
Batavia, Illinois
- 5 Lawrence Berkeley National Laboratory
Berkeley, California
- 6 Oak Ridge National Laboratory
Oak Ridge, Tennessee
- 7 Pacific Northwest National Laboratory
Richland, Washington
- 8 Princeton Plasma Physics Laboratory
Princeton, New Jersey
- 9 SLAC National Accelerator Laboratory
Menlo Park, California
- 10 Thomas Jefferson National Accelerator Facility
Newport News, Virginia

Other DOE Laboratories

- 1 Idaho National Laboratory
Idaho Falls, Idaho
- 2 National Energy Technology Laboratory
Morgantown, West Virginia
Pittsburgh, Pennsylvania
Albany, Oregon
- 3 National Renewable Energy Laboratory
Golden, Colorado
- 4 Savannah River National Laboratory
Aiken, South Carolina

NNSA Laboratories

- 1 Lawrence Livermore National Laboratory
Livermore, California
- 2 Los Alamos National Laboratory
Los Alamos, New Mexico
- 3 Sandia National Laboratory
Albuquerque, New Mexico
Livermore, California



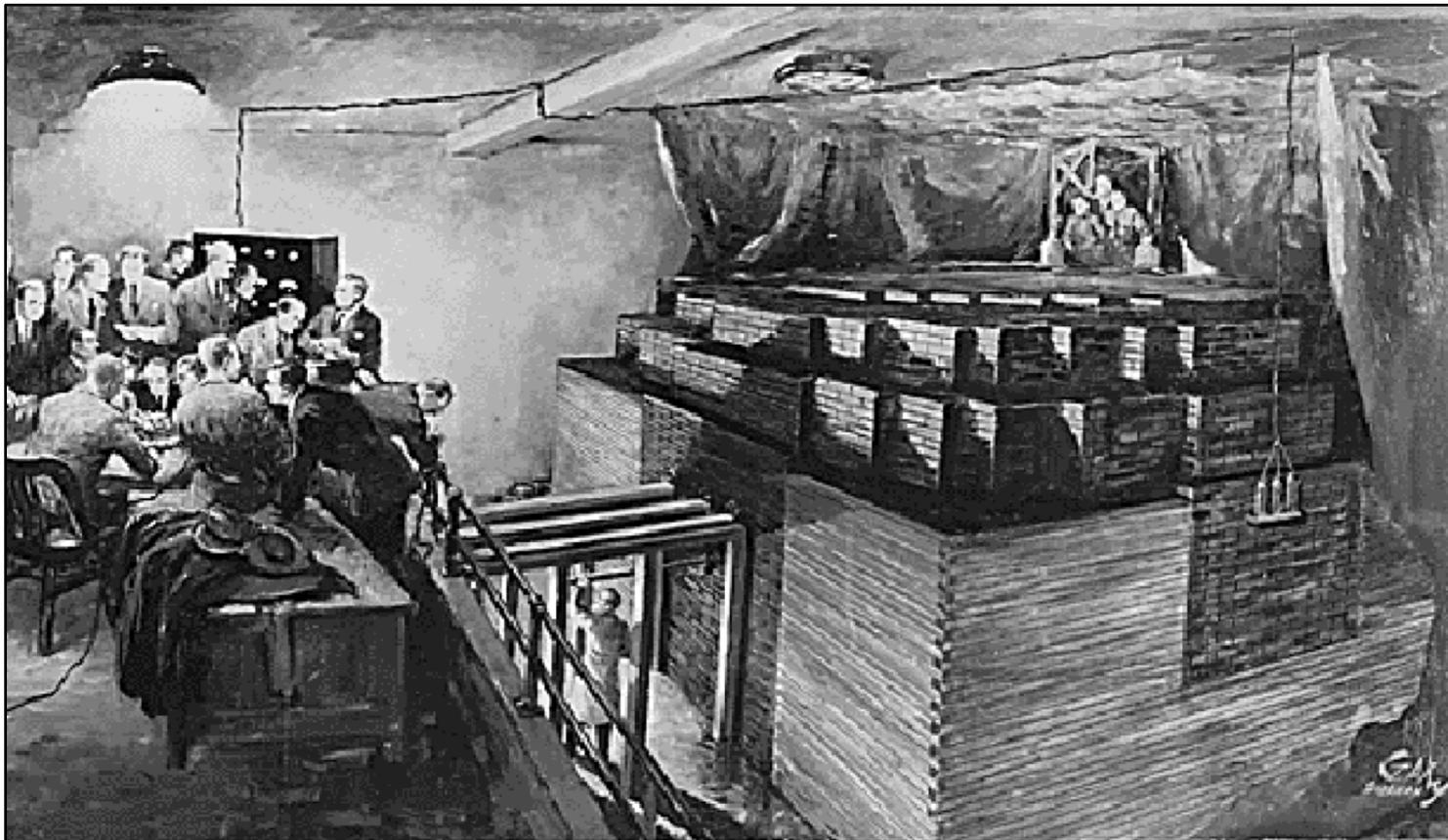
Together, the **17 DOE laboratories** comprise a preeminent federal research system, providing the Nation with strategic scientific and technological capabilities. The laboratories:

- Execute long-term government scientific and technological missions, often with complex security, safety, project management, or other operational challenges;
- Develop unique, often multidisciplinary, scientific capabilities beyond the scope of academic and industrial institutions, to benefit the Nation's researchers and national strategic priorities; and
- Develop and sustain critical scientific and technical capabilities to which the government requires assured access.

Source: https://science.energy.gov/~media/_images/laboratories/DOE_Laboratories_Map_2014_Hi-res.jpg

The origin of Argonne National Laboratory

CP-1 under the stands of Stagg field of U. Chicago



Chicago Pile-1 was the world's first artificial nuclear reactor. The first man-made self-sustaining nuclear chain reaction was initiated on December 2, 1942



Chicago Pile-1: A Brick History

<https://www.youtube.com/watch?v=mTPiTJ2bKS0>

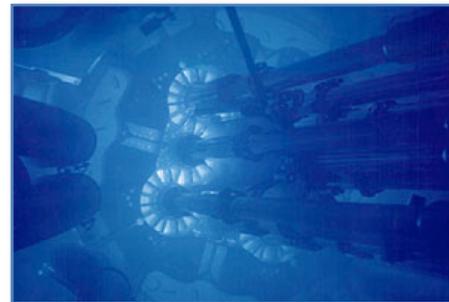
Argonne's mission: Provide science-based solutions to pressing global challenges



Energy Science



Environmental Sustainability

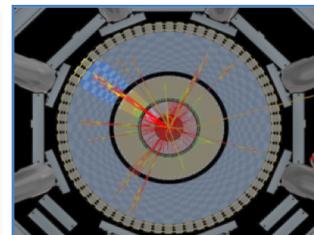
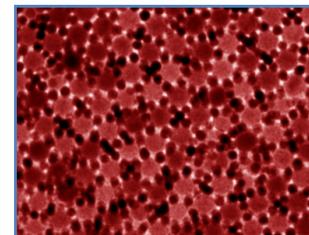
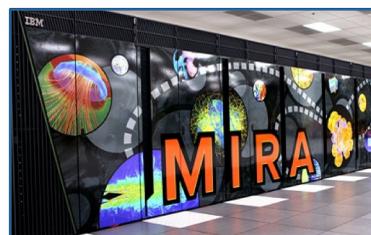


Nuclear and National Security

*Use-Inspired Science and Engineering ...
... Discovery and transformational Science and Engineering*



Major User Facilities



Science and Technology Programs

RESEARCH DIVISIONS

Computing, Environment and Life Sciences

- BIO Biosciences
- EVS Environmental Science
- MCS Mathematics and Computer Science

Energy and Global Security

- ES Energy Systems
- GSS Global Security Sciences
- NE Nuclear Engineering

Photon Sciences

- ASD Accelerator Systems
- AES APS Engineering Support
- XSD X-ray Science

Physical Sciences and Engineering

- CSE Chemical Sciences and Engineering
- HEP High Energy Physics
- MSD Materials Science
- NST Nanoscience and Technology
- PHY Physics

FACILITIES, CENTERS, AND INSTITUTES

User Facilities

- APS Advanced Photon Source
- ALCF Argonne Leadership Computing Facility
- ATLAS Argonne Tandem Linear Accelerator System
- ARM ARM Southern Great Plains
- CNM Center for Nanoscale Materials

Centers and Joint Institutes

- AAI Argonne Accelerator Institute
- ACCESS Argonne Collaborative Center for Energy Storage Science
- ADW Argonne Design Works
- ALI Argonne Leadership Institute
- CEES Center for Electrochemical Energy Science
- CTR Center for Transportation Research
- CRI Chain Reaction Innovations
- CI Computation Institute
- IACT Institute for Atom-Efficient Chemical Transformations
- IGSB Institute for Genomics and Systems Biology
- IME Institute for Molecular Engineering
- JCESR Joint Center for Energy Storage Research
- MCSG Midwest Center for Structural Genomics
- NSP National Security Programs
- NAISE Northwestern-Argonne Institute for Science and Engineering
- RISC Risk and Infrastructure Science Center
- SBC Structural Biology Center

<https://www.anl.gov>

Major Scientific User Facilities at Argonne

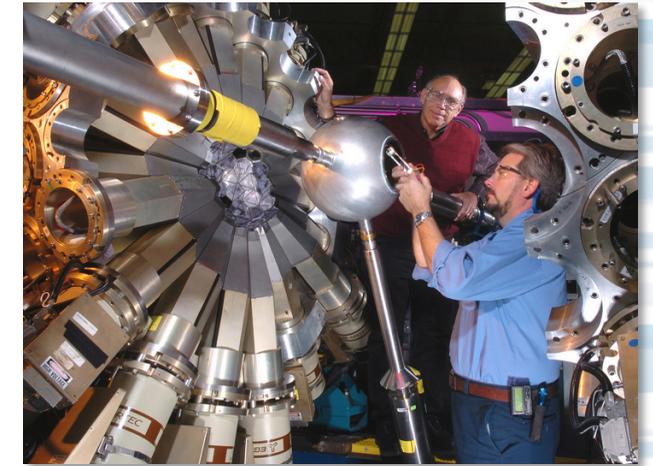
**Advanced
Photon
Source**



**Argonne
Leadership
Computing
Facility**

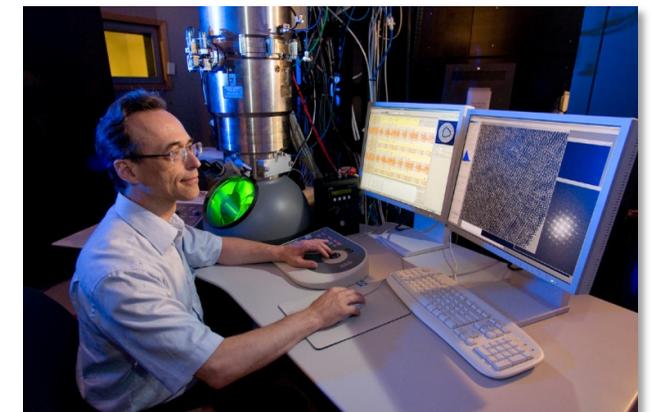


**Argonne Tandem Linear
Accelerator System**



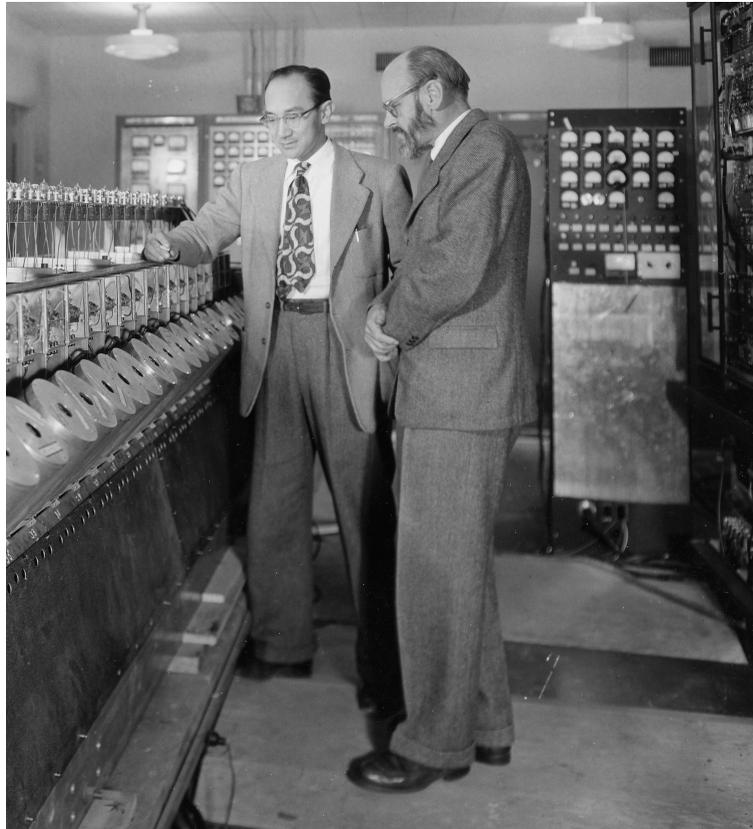
**Center for
Nanoscale
Materials**

**Electron
Microscopy
Center**



AVIDAC (1949-1953)

Argonne's Version of the Institute's Digital Arithmetic Computer



“Moll” Flanders, Director
Jeffrey Chu, Chief Engineer

- **AVIDAC:** based on a prototype at the Institute for Advanced Study in Princeton
- **Margaret Butler wrote AVIDAC's interpretive floating-point arithmetic system**
 - Memory access time: 15 microsec
 - Addition: 10 microsec
 - Multiplication: 1 millisecc
- **AVIDAC press release:**
100,000 times as fast as a trained “Computer” using a desk calculator

Early work on computer architecture



Margaret Butler helped assemble the ORACLE computer with ORNL Engineer Rudolph Klein

In 1953...

ORACLE was the world's fastest computer, multiplying 12-digit numbers in .0005 seconds (2Kop/s).

Designed at Argonne, it was constructed at Oak Ridge.

The future... Aurora Exascale System



Argonne National Laboratory Tour

(if you signed in)

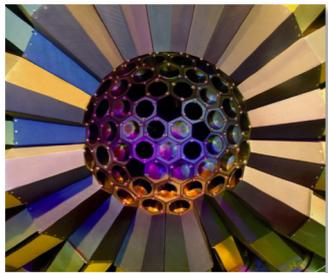
Saturday, August 3 8:30 am – 2:30 pm

(round-trip from Q Center to Argonne by bus with stop at downtown St. Charles on the way back)



The Argonne Leadership Computing Facility (ALCF) is one half of the U.S. Department of Energy's (DOE) Leadership Computing Facility, which deploys two diverse high-performance computer architectures that are 10 to 100 times more powerful than typical research computing.

The Advanced Photon Source (APS) is one of the most technologically complex machines in the world. The APS provides the brightest high-energy X-ray beams in the Western Hemisphere to more than 6,000 scientists each year from every U.S. state, the District of Columbia, Puerto Rico, and countries in the world.



The Argonne Tandem Linac Accelerator System (ATLAS) is the world's first ion accelerator using superconducting devices for the energy gain. It is capable of accelerating ions of all elements, both stable and radioactive, from hydrogen to uranium for research into the properties of the nucleus, the core of matter, the fuel of stars.

The Nuclear Energy Exhibition Hall (NEE) showcases Argonne's rich heritage in the development of nuclear reactors and its current role in the development of next-generation reactors and fuel cycle technologies.



Aerial view of Argonne National Laboratory

Advanced
Photon
Source
(APS)

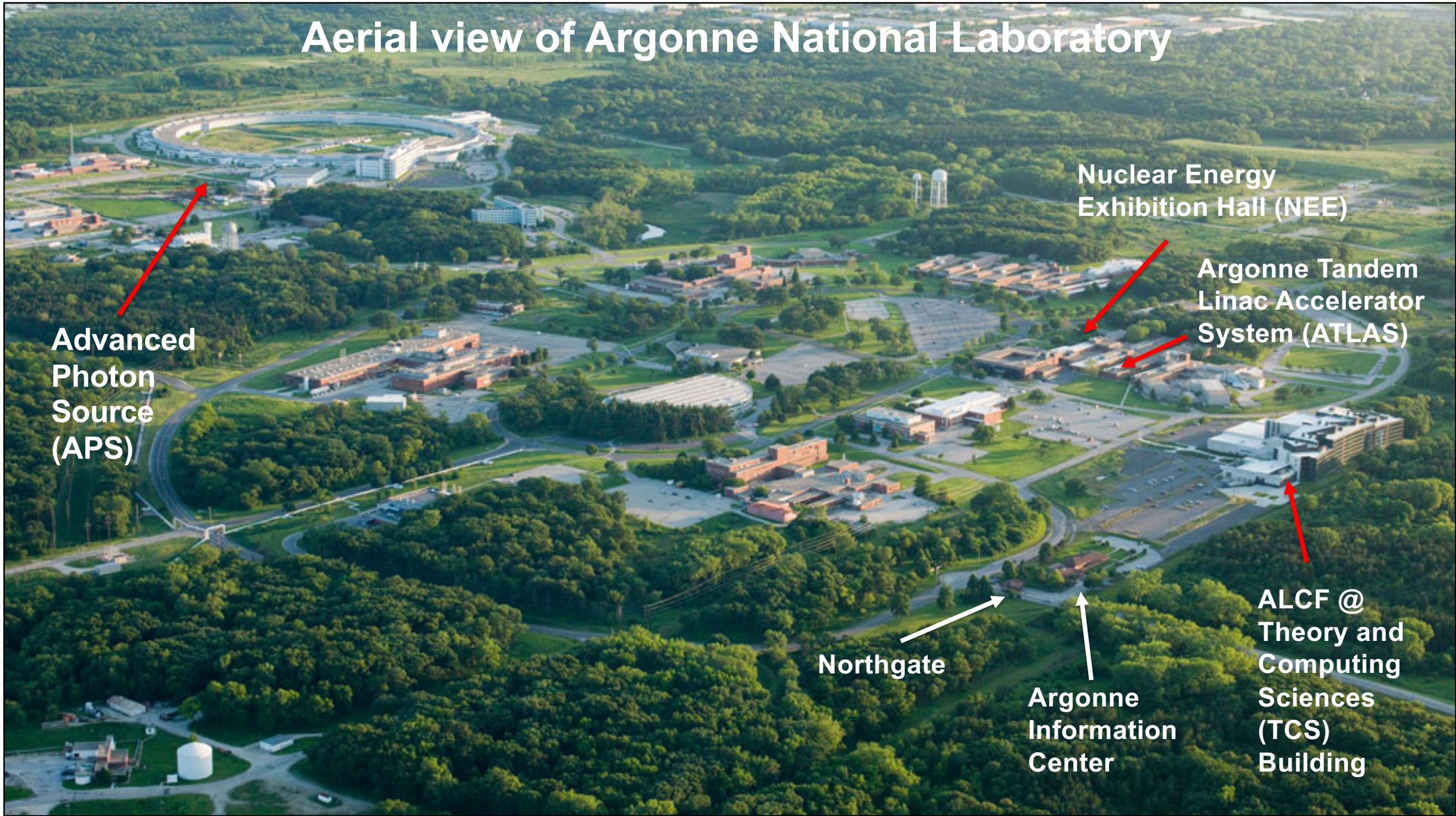
Nuclear Energy
Exhibition Hall (NEE)

Argonne Tandem
Linac Accelerator
System (ATLAS)

Northgate

Argonne
Information
Center

ALCF @
Theory and
Computing
Sciences
(TCS)
Building

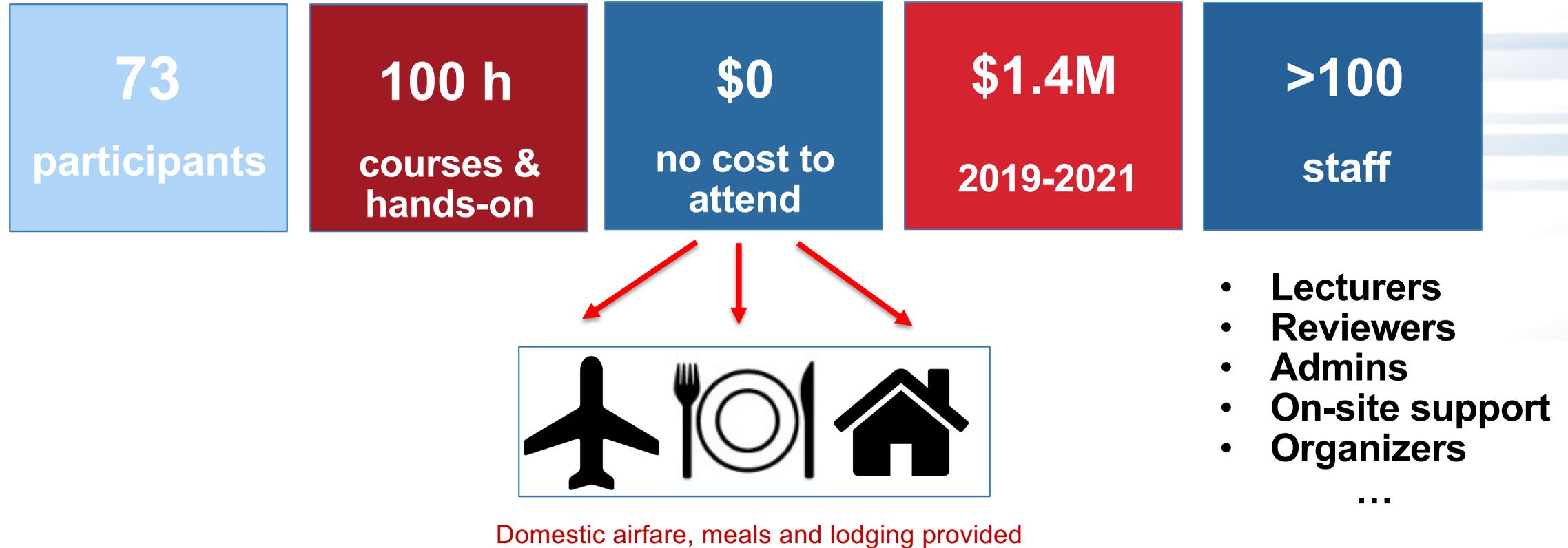


Motivation of the ATPESC

Motivation of the ATPESC

- Today's most **powerful supercomputers** have **complex hardware architectures** and **software environments**
 - and even greater complexity is on the horizon on next-generation and exascale systems
- The **scientific and engineering applications** that are tackled with these systems are themselves **complex**
- There is a **critical need for specialized, in-depth training for the computational scientists** poised to facilitate breakthrough science and engineering using these systems

ATPESC 2019 by the numbers



The Curriculum

Curriculum Tracks and their leaders

- **Track 1: Hardware Architectures** – Pete Beckman
- **Track 2: Programming Models and Languages** – Rajeev Thakur and Yanfei Guo
- **Track 3: Data-intensive Computing and I/O** – Rob Latham and Phil Carns
- **Track 4: Visualization and Data Analysis** – Mike Papka and Joseph Insley
- **Track 5: Numerical Algorithms and Software for Extreme-Scale Science** – Lois McInnes and Mark Miller
- **Track 6: Performance Tools and Debuggers**– Ray Loy and JaeHyuk Kwack
- **Track 7: Software Engineering** – Anshu Dubey and Katherine Riley
- **Track 8: Machine Learning and Deep Learning for Science** – Venkatram Vishwanath and Prasanna Balaprakash

Dinner Talks

- Purpose: present additional topics that will probably be relevant to your research at some point in your career – but in any case interesting



Rommie Amaro
UC San Diego



Rob Schreiber
Cerebras



Mark Miller
LLNL



Jeffrey Vetter
ORNL



Katrin Heitmann
ANL



Ian Foster
ANL



Michela Taufer
ACM



Mark Jackels
DreamWorks



Yuri Alexeev
ANL

ATPESC Resources

The screenshot shows the 'User Facilities at a Glance' page on the DOE Office of Science website. The page features a navigation menu with 'User Facilities' selected. The main content area is titled 'User Facilities at a Glance' and 'ASCR User Facilities'. It lists several national scientific user facilities, each with a small image and a brief description:

- Argonne Leadership Computing Facility (ALCF)** at Argonne National Laboratory: The ALCF provides the computational science community with a world-class computing capability dedicated to breakthrough science and engineering.
- Energy Sciences Network (ESnet)** at Lawrence Berkeley National Laboratory: The ESnet is a high-speed network serving thousands of Department of Energy researchers and collaborators worldwide.
- National Energy Research Scientific Computing Center (NERSC)** at Lawrence Berkeley National Laboratory: The NERSC is the mission high performance computing facility for the Department of Energy's Office of Science, and is a world leader in accelerating scientific discovery through computation.
- Oak Ridge Leadership Computing Facility (OLCF)** at Oak Ridge National Laboratory: The OLCF provides the computational science community with world-class computing capability dedicated to breakthrough science and engineering.

On the right side of the page, there are links for 'User Resources', 'User Statistics', 'Policies and Processes', 'Frequently Asked Questions', 'User Facility Science Highlights', and 'User Facility News'. A contact information box is also present at the bottom left of the page content.

 **ALCF** – Mira, Cetus, Vesta, Cooley and Theta

 **JLSE** – all testbeds

 **NERSC** – Cori

 **OLCF** – Summit

Source: <https://science.energy.gov/user-facilities/user-facilities-at-a-glance/ascr/>

Yes, the ATPESC is an intensive program

- Many lectures every day, followed by evening hands-on sessions
- Ideally we would cover all topics in more depth but the result would be a six-week program
 - But few people's schedules would allow them to participate
- Note the **8:30 am** starting time, dinner at **5:30 pm** right after the end of the afternoon lectures, evening sessions

ATPESC Deliverables

- **Presentations**

The slides of the Lectures will be available before the talk with the exception of the Dinner Talks (to keep some mystery)



All presentations will be available under a Box folder at the end of the program

- **Videos**

The videos of the Lectures will be available in September on the Argonne Youtube Channel and the ATPESC website

<https://www.youtube.com/user/ArgonneNationalLab>

NEW!

- **Audio-only files**

MP3 audio files of the Lectures (2017-2019) will be available in September on the ATPESC website

<https://extremecomputingtraining.anl.gov>

Goals for today

Check-in (hotel and program)

ATPESC Resources

- Pick up ALCF and OLCF tokens, and NERSC account instructions, log in to JLSE
- Log in to all ATPESC Resources

Introductions and discussions

Plan your time at ATPESC

- Agenda, tracks, breaks ...
- Location, activities, food ...

Goals for the next two weeks



Get inspired

New ideas

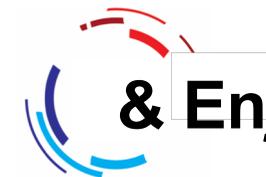
Challenge your science and codes



Take advantage of ATPESC Resources



Talk with Lecturers, Participants, Support Staff...



& Enjoy!

Logistics and reminders

ATPESC Website

extremecomputingtraining.anl.gov



[HOME](#) [ABOUT ATPESC](#) [PARTICIPANT REGISTRATION](#) [LECTURERS REGISTRATION](#) [ATPESC 2019 PARTICIPANTS](#) [PAST PROGRAMS](#)



Go to the ATPESC agenda

<https://extremecomputingtraining.anl.gov/agenda-2019/>

Agenda 2019

The screenshot shows the ATPESC 2019 agenda page. At the top, there are three filter buttons: "Filter by track", "Filter by location", and "Filter by days". The "Filter by days" menu is open on the right, showing a list of dates from July 28, 2019, to August 9, 2019. The "Filter by track" menu is open in the center, showing a list of tracks including "All", "Hardware Architectures", "Programming Models and Languages", "Data Intensive Computing and I/O", "Visualization and Data Analysis", "Numerical Algorithms and Software for Extreme-Scale Science", "Performance Tools and Debuggers", "Software Productivity", "Machine Learning and Deep Learning in Science", and "Dinner Talks". The "Filter by location" menu is open at the bottom right, showing a list of locations including "All", "Entrance 4 Lobby / Room D L202", "Q Tower Dining", "Fox River Ballroom 3", "Fox River Ballroom 6", "St. Charles Amphitheater", and "St. Charles". The main agenda content is visible on the left, showing events for July 28, 2019, including "On-site Check-in" and two presentations.

Filter by track ▾ Filter by location ▾ Filter by days ▾

Filter by days ▾

- All
- July 28, 2019
- July 29, 2019
- July 30, 2019
- July 31, 2019
- August 1, 2019
- August 2, 2019
- August 3, 2019
- August 4, 2019
- August 5, 2019
- August 6, 2019
- August 7, 2019
- August 8, 2019
- August 9, 2019

Filter by track ▾ Filter by location ▾ Filter by days ▾

Filter by track ▾ Filter by location ▾ Filter by days ▾

- All
- Hardware Architectures
- Programming Models and Languages
- Data Intensive Computing and I/O
- Visualization and Data Analysis
- Numerical Algorithms and Software for Extreme-Scale Science
- Performance Tools and Debuggers
- Software Productivity
- Machine Learning and Deep Learning in Science
- Dinner Talks

Filter by location ▾ Filter by days ▾

- All
- Entrance 4 Lobby / Room D L202
- Q Tower Dining
- Fox River Ballroom 3
- Fox River Ballroom 6
- St. Charles Amphitheater
- St. Charles

July 28, 2019

2:00 pm - 4:00 pm **On-site Check-in**
Entrance 4 Lobby / Room D L202 [More info >](#)

4:00 pm - 4:30 pm **Presentation: Introduction to the ATPESC**
St. Charles Amphitheater [More info >](#)

 Marta García Martínez, ANL

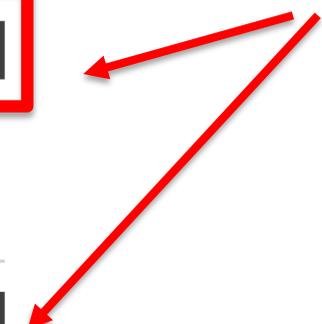
4:30 pm - 5:30 pm **Presentation: Quick Start on ATPESC Computing Resources**
St. Charles Amphitheater

 Ray Loy, ANL

Go to the ATPESC agenda

	Filter by track ▾	Filter by location ▾	Filter by days ▾
July 28, 2019			
2:00 pm - 4:00 pm	On-site Check-in Entrance 4 Lobby / Room D L202		More info >
4:00 pm - 4:30 pm	Presentation: Introduction to the ATPESC St. Charles Amphitheater  Marta García Martínez, ANL		More info >
4:30 pm - 5:30 pm	Presentation: Quick Start on ATPESC Computing Resources St. Charles Amphitheater  Ray Loy, ANL		More info >

**Click here:
"More info"**



Go to the ATPESC agenda



[HOME](#) [ABOUT ATPESC](#) [ATPESC ARGONNE TOUR](#) [AGENDA 2018](#) [PARTICIPANTS 2018](#) [LECTURERS 2018](#) [PAST PROGRAMS](#)

Presentation: Introduction to the ATPESC



Click here



LOCATION: **St. Charles Amphitheater**

DATE: **July 28, 2019**

TIME: **4:00 pm - 4:30 pm**



MARTA GARCÍA MARTÍNEZ, ANL



ATPESC Pocket Folder

Contains information about:

- Maps of the Q Center (Conference Area, Guest, Aerobic Mile Chart)
- Restaurants around Q Center
- Some flyers of the systems that you will be using
- ANL tour flyers
- *Argonne Now* magazine
- Information about tokens and what to do in case of problems (provided during check-in)

General Logistics

- Breakfast & Lunch in the **Q Tower Dining**
- Menus** will be sent after this talk.
- A photographer will stop by one day to take a **group photo**. We will let you know in advance.
- An Argonne team might conduct brief **interviews** with some participants.
- Buses** location for ANL Tour and ORD transportation (8/10) will depart from the South Entrance (close to the Gift Shop)



	Elevator
	Entrance
	Keycard entrance
	Accessible entrance
	Stairs
	Automatic External Defibrillator
	Smoking shelter
	Kiosk (Internet)
	Business Center
	Conference Dining

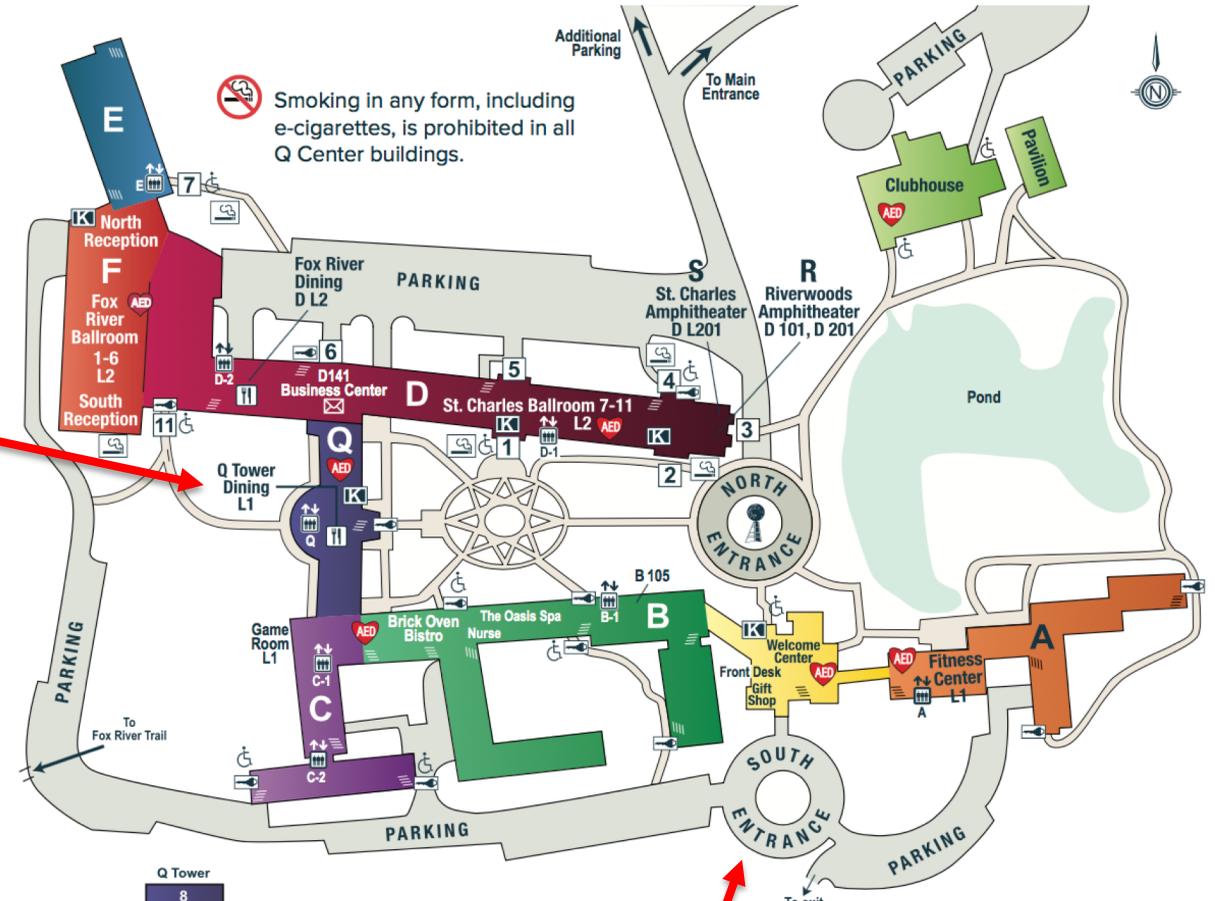
Navigating Q

Signs like this are posted on hallway ceilings and above doorways to help you find your way.



Current area and floor Areas you're headed toward Turns you need to make to get to those areas

Conference Area E	Conference Area F	Conference Area D	Q Tower	Guest Area C	Guest Area B	Welcome Center	Guest Area A
L1	L2	L1	8	5	5	2	5
L2	L2	L1	7	4	4	1	4
L3		L1	6	3	3	2	3
L4		L1	5	2	2	1	2
		L1	4	1	1	1	1



Smoking in any form, including e-cigarettes, is prohibited in all Q Center buildings.

Download our app today for navigation, event information and services!

Download on the App Store GET IT ON Google Play

1405 North Fifth Ave. | St. Charles, IL 60174 | 877.774.8437 | Front Desk 630.377.3100 | qcenter.com

080916



General Logistics

- All lectures and hands-on sessions in the Lecturer Room in the St. Charles Amphitheater
- Dinner Talks in the Fox River Ballroom 3 and 6
- Nourishment Hubs available; 8 – 11 am and 2 – 5 pm
- Office hours: 8 am – 5 pm (lunch break closed: 12 – 1 pm)



Mens sana in corpore sano

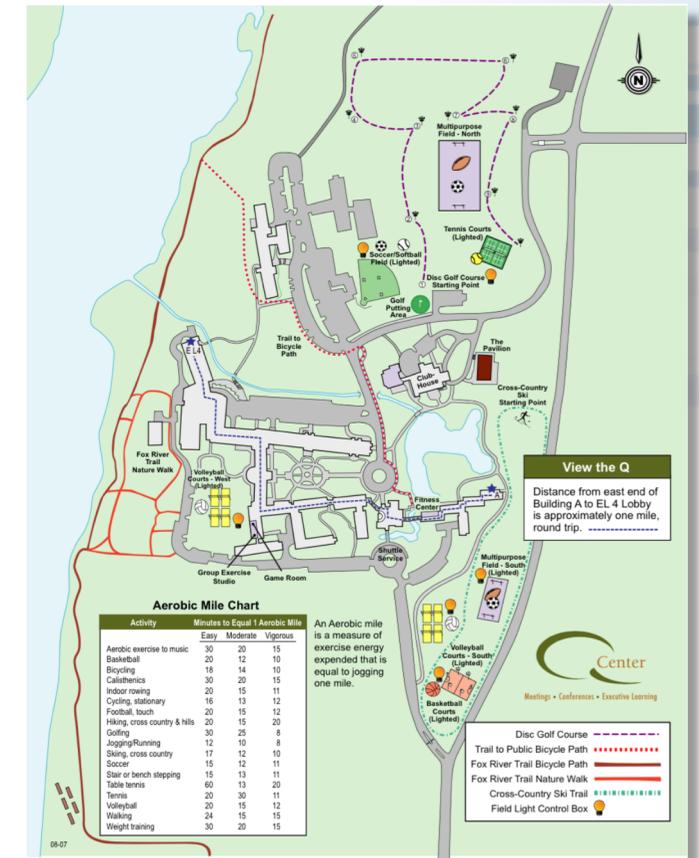
Mens sana in corpore sano is a Latin phrase, usually translated as "a healthy mind in a healthy body". The phrase is widely used in sporting and educational contexts to express the theory that physical exercise is an important or essential part of mental and psychological well-being. (*)

Source: https://en.wikipedia.org/wiki/Mens_sana_in_corpore_sano

Day	First Light	Sunrise	Sunset	Last Light
SUN 28 Jul	5:11 am	5:43 am	8:16 pm	8:47 pm
MON 29 Jul	5:12 am	5:44 am	8:14 pm	8:46 pm
TUE 30 Jul	5:13 am	5:45 am	8:13 pm	8:45 pm
WED 31 Jul	5:15 am	5:46 am	8:12 pm	8:44 pm
THU 1 Aug	5:16 am	5:47 am	8:11 pm	8:43 pm
FRI 2 Aug	5:17 am	5:48 am	8:10 pm	8:41 pm
SAT 3 Aug	5:18 am	5:49 am	8:09 pm	8:40 pm
SUN 4 Aug	5:19 am	5:50 am	8:08 pm	8:39 pm
MON 5 Aug	5:20 am	5:51 am	8:06 pm	8:37 pm
TUE 6 Aug	5:21 am	5:52 am	8:05 pm	8:36 pm
WED 7 Aug	5:22 am	5:53 am	8:04 pm	8:35 pm
THU 8 Aug	5:23 am	5:54 am	8:03 pm	8:33 pm
FRI 9 Aug	5:25 am	5:55 am	8:01 pm	8:32 pm
SAT 10 Aug	5:26 am	5:56 am	8:00 pm	8:30 pm

Source: <http://sunrisesunset.willyweather.com/il/kane-county/st-charles.html>

Aerobic Mile Chart @ Q Center



Meals

Breakfast

2018 spring and summer MOD Items							
Item	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Self Serve	Scrambled Eggs	Scrambled Eggs	Scrambled Eggs	Scrambled Eggs	Scrambled Eggs	Scrambled Eggs	Scrambled Eggs
Starch	Chef's Potatoes	hash browns	Chef's Potatoes	hash browns	Chef's Potatoes	Chef's Potatoes	Chef's Potatoes
Protein	Hickory Smoked Bacon	Chicken Apple Sausage	Hickory Smoked Bacon	Chicken Apple Sausage	Hickory Smoked Bacon	Sausage Links	Hickory Smoked Bacon
Side	Pork Sausage Links	Hickory Smoked Bacon	Turkey Ham	Hickory Smoked Bacon	Pork Sausage Patties		
Side	Broccoli, Ham and Cheese Casserole	Bacon and Egg Breakfast cups	Corned Beef Hash	Spinach Quice	Farmers Hash	Belgian Waffles	Pancakes

All Breakfast MOD's Include Bakery Breads and Pastries, Milk, Dry Cereal, Yogurt, Toast & Seasonal Cut Fruit. Freshly Brewed Regular and Decaffeinated Coffees, Specialty Teas, Milk, Assorted Juices, and Assorted Sodas.

Lunch

2018 Spring and summer MOD Items							
LUNCH MOD - WEEK 1							
ITEM	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Soup	Cream of Asparagus and Basil Soup	Chicken Noodle Soup	Beef Barley Soup	Tomato Basil Soup	Shrimp Bisque	Chef's Choice	Chef's Choice
Salad du Jour	Tossed Salad du Jour with 2 Dressings	Tossed Salad du Jour with 2 Dressings	Tossed Salad du Jour with 2 Dressings	Tossed Salad du Jour with 2 Dressings	Tossed Salad du Jour with 2 Dressings	Tossed Salad du Jour with 2 Dressings	Tossed Salad du Jour with 2 Dressings
Enhanced Salad (Add'l Charge)	Chopped Romaine with Peppers, Baby Corn and Balsamic Vinaigrette	Chopped Romaine with Black Beans, Corn, Tomato, Red Onion and Cilantro Lime Vinaigrette	Field Greens with Red Onion, Olives, Asparagus with Herb Vinaigrette	Iceberg Lettuce with Slice Turkey, Tomato, Bacon, Bleu Cheese and Sun-Dried Tomato Vinaigrette	Mixed Greens with Asparagus Tomato, Peppers, and Lemon Dill Vinaigrette	Chopped Romaine with Parmesan Cheese, Croustons and Caesar Dressing	Field Greens with Red Onion, Olives, Asparagus with Herb Vinaigrette
Vegetarian Option	Vegetarian Gratin	Vegetable Fajitas	Vegetable Pancit	Penne Pasta with Lentil Bolognese	Green Chili Corn Casserole	Chef's Choice	Chef's Choice
Entrée	Honey Mustard Glazed Artich Char	Seared Mahi with Spicy Papaya Relish	Tilapia in Hot and Sour Sauce	Sole Meuniere	BBQ Salmon with an Andouille Hash	Chef's Choice	Chef's Choice
Entrée	Potato Gnocchi with Vodka Sauce	Southwester Chicken Penne	Filipino Adobo Chicken	Flat Iron Steaks Smothered In Onions	Bang Bang Chicken	Chef's Choice	Chef's Choice
Starch	Basil and Brown Rice Pilaf	Arroz Verde	Garlic Rice	Roasted Potatoes	Fried Rice	Chef's Choice	Chef's Choice
Vegetable	Roasted Vegetables	Roasted Asparagus	Sautéed Squash	Sweet Roached Carrots	Sesame and Honey Glazed Carrots	Chef's Choice	Chef's Choice
Dessert	Chocolate Chunk Cookie	Triple Chocolate Cookie	Heath Crunch Cookie	White Choc. Mac. Nut Cookie	Chocolate Coconut Cookie	Assorted Cookies	Assorted Cookies
Enhanced Dessert (Add'l Charge)	Cherry Cake	Apricot Crumble Bar	Triple Chocolate Cake	Chocolate Crumble Bar	Lemon Crisp Bar	Chef's Choice	Chef's Choice

Note: All menu items are subject to change without notice.

The MOD lunches that are attached are VERY limited to what will be available in the dining room. This is only for the private meals which are based off of what is offered in the dining room. Please check the app daily to see the full menu selection.

Nourishment Hubs

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Serving Times	All Day	All Day	All Day	All Day	All Day	All Day	All Day
Flavored Waters	Cucumber / Kiwi	Watermelon	Orange	Pineapple / Basil	Lemon / Mint	Orange	Pineapple
Serving Times	7:30a-9:30a	7:30a-9:30a	7:30a-9:30a	7:30a-9:30a	7:30a-9:30a	7:30a-9:30a	7:30a-9:30a
	Homemade granola*	Homemade granola*	Homemade granola*	Homemade granola*	Homemade granola*	Homemade granola*	Homemade granola*
Serving Times	7:30a-11a	7:30a-11a	7:30a-11a	7:30a-11a	7:30a-11a	7:30a-11a	7:30a-11a
	Trail Mix*	Trail Mix*	Trail Mix*	Trail Mix*	Trail Mix*	Trail Mix*	Trail Mix*
Sliced Fresh Fruit	Watermelon	Honey Dew	Cantaloupe	Watermelon	Honey Dew	Cantaloupe	Honey Dew
Additional Sweet Item	Donut Holes	Donut Holes	Donut Holes	Donut Holes	Donut Holes	Donut Holes	Donut Holes
Morning Pastry	Gluten Free Mango Swirl Cake**	Mini Blueberry Muffins*	Gluten Free Marble Coffeecake*	Mini Chocolate Chip Muffin*	Lemon Scone*	Chef's Choice	Chef's Choice
Baked Breakfast Bread	Chocolate Breakfast Bread*	Pineapple Coconut Bread*	Cherry Vanilla Bread*	Raspberry Orange Bread*	Banana Bread*	Banana Bread*	Cherry Vanilla Bread*
Baked Breakfast Item	Croissants with jam, whipped butter	Fresh baked biscuits w/ jam, whipped butter	Croissants with jam, whipped butter	Fresh baked biscuits w/ jam, whipped butter	Croissants with jam, whipped butter	Fresh baked biscuits w/ jam, whipped butter	Croissants with jam, whipped butter
Power bars	Peanut Butter and Oatmeal Energy Bar*	Chocolate Energy Bar*	Lemon Energy Bar*	Cashew & Apricot Bar*	Brownie Energy Bar*	Chef's Choice Energy Bar	Chef's Choice Energy Bar
Serving Times	9:30a-11a	9:30a-11a	9:30a-11a	9:30a-11a	9:30a-11a	9:30a-11a	9:30a-11a
Protein Item	Hard cooked eggs with hot sauce and salt & pepper	Hard cooked eggs with hot sauce and salt & pepper	Hard cooked eggs with hot sauce and salt & pepper	Hard cooked eggs with hot sauce and salt & pepper	Hard cooked eggs with hot sauce and salt & pepper	Hard cooked eggs with hot sauce and salt & pepper	Hard cooked eggs with hot sauce and salt & pepper
Serving Times	2p-5p	2p-5p	2p-5p	2p-5p	2p-5p	2p-5p	2p-5p
Kitchen Station	Agave Roasted Chickpeas*** Hummus Carrots	Garlic & Parm.. Roasted Chickpeas Ranch Dip Celery	Lime, Cumin & Cilantro Roasted Chickpeas Pico de Gallo Corn Tortilla Chips	Honey Cinnamon Roasted Chickpeas Peanut Butter Celery Sticks	Sweet & Spicy Roasted Chickpeas w/ Rosemary Nutella spread Cinnamon Sugar Crisps	Garlic & Parm.. Roasted Chickpeas Ranch Dip Celery	Honey Cinnamon Roasted Chickpeas Peanut Butter Celery Sticks
Serving Times	2p-5p	2p-5p	2p-5p	2p-5p	2p-5p	2p-5p	2p-5p
	Ice Cream Novelties						
Baked Cookie	Chocolate Chip Cookie*	Sugar Cookie*	Chewy Chocolate Cookie*	M & M Cookie*	Oatmeal Raisin Cookie*	Sugar Cookie*	M & M Cookie*
Baked Treats	Orange Texas Sheet Cake*	Chocolate Shortbread*	Rice Krispy Treats	Brownies*	Cherry Bar*	Rice Krispy Treats	Shortbread*
Fruit	Strawberries	Sliced Apples	Orange wedges	Strawberries	Grapes	Orange wedges	Grapes

Dinner

Food

Function: Dinner
Room: Fox River Ballroom 6
Time: 5:30 PM to 7:00 PM

MOD Dinner

Creamy Chipotle Potato Soup
 Tossed Greens Salad with Assorted Dressings
 Artisan Breads and Rolls with Butter

 Honey Ginger Crispy Tofu with Broccoli
 Herb Roasted Chicken
 Spicy Sesame Beef with Scallions

 Ginger Cilantro Rice
 Roasted Asparagus

 Lemon Bites
 Assorted Hot and Cold Beverages

 Menu items are subject to change without notice

Included in Package

Participant Introductions

Today (7/28) during Dinner

INSTRUCTIONS FOR PARTICIPANT INTRODUCTION SLIDE

- Section 1**
- Profile Picture** | Attach a recent photo
 - Name** | First, Last Name > Example: John Doe
 - Position** | Ph.D. Student, Postdoc, Engineer, etc.
 - Department, Institution** | > Example: Civil Engineering, Univ. of Houston, TX (USA)
 - University Logo and/or current Institutional Logo** (if you have one)

- Section 2**
- Scientific Field** | Pull field from the list below
 - Research Interests** | Name three (or more)
 - Personal Interests** | Name two (or more)

- Section 3**
- Graphic** | Attach a jpeg, png, tiff or an editable file of an image of your choice about your work

List of Scientific Fields

- Biological Sciences, Bioinformatics
- Biological Sciences, Biophysics
- Biological Sciences, Medical Science
- Biological Sciences, Neuroscience
- Biological Sciences, Proteomics
- Biological Sciences, Systems Biology
- Chemistry, General
- Chemistry, Biochemistry
- Chemistry, Catalytic
- Chemistry, Combustion
- Chemistry, Environmental
- Chemistry, Geochemistry
- Chemistry, Inorganic
- Chemistry, Organic
- Chemistry, Physical
- Chemistry, Quantum Chemistry
- Computer Science
- Earth Science, Agricultural Sciences
- Earth Science, Earth Science, Climate Research
- Earth Science, Environmental Sciences
- Earth Science, Geological Sciences
- Economics
- Energy Technologies, Bioenergy
- Energy Technologies, Wind Energy
- Energy Technologies, Solar Energy
- Energy Technologies, Energy Efficiency
- Energy Technologies, Energy Storage
- Energy Technologies, Energy Grid
- Engineering, Aerodynamics
- Engineering, Fluid-Structure Interaction
- Engineering, Fluids and Turbulence
- Engineering, Heat Transfer
- Engineering, Material Response
- Fusion Energy, Inertial Fusion
- Fusion Energy, Magnetic Fusion
- Materials Science, Condensed Matter and Materials Physics
- Materials Science, Materials Discovery, Design, and Synthesis
- Materials Science, Nanoelectronics
- Materials Science, Nanomechanics
- Materials Science, Nanophotonics
- Materials Science, Nanoscience
- Mathematics
- Nuclear Energy
- Physics, Accelerator Physics
- Physics, Astrophysics
- Physics, Atomic/Molecular Physics
- Physics, Condensed Matter Physics
- Physics, High Energy Physics
- Physics, Nuclear Physics
- Physics, Space Physics
- Physics, Particle Physics
- Physics, Plasma Physics

ATPESC 2019, July 28 – August 9, 2019



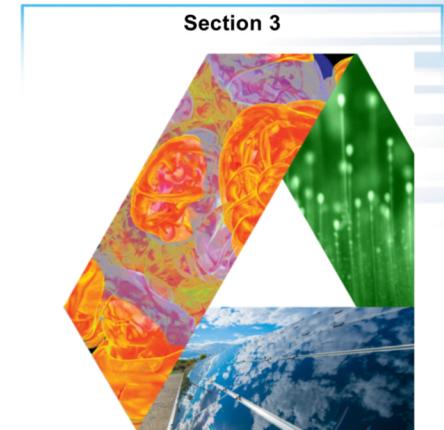
Section 1



John Doe
 Ph.D. Student
 Civil Engineering, University of Houston
 Houston, TX (USA)

- Section 2**
- Scientific Field** | Mathematics
 - Research Interests**
 - Subsurface flow and transport
 - Finite Element Methods
 - High-Performance Computing
 - Personal Interests**
 - Tennis
 - Fishing

ATPESC 2019, July 28 – August 9, 2019





Marta García Martínez

Principal Project Specialist – Computational Science
Argonne National Laboratory
Argonne, IL (USA)



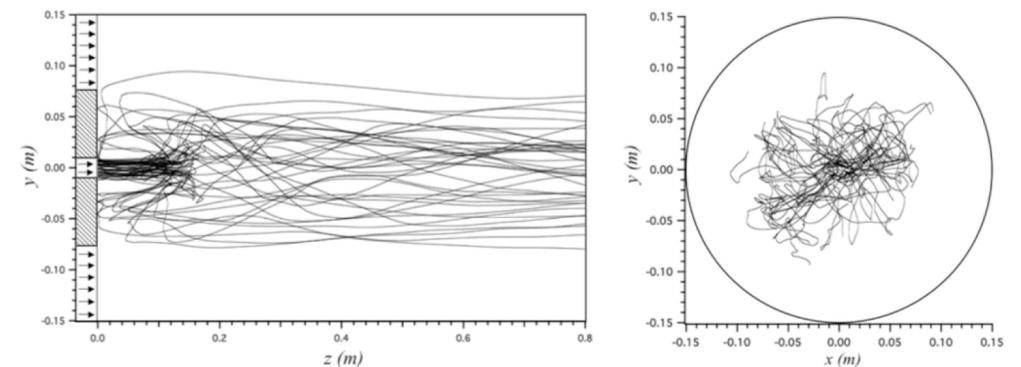
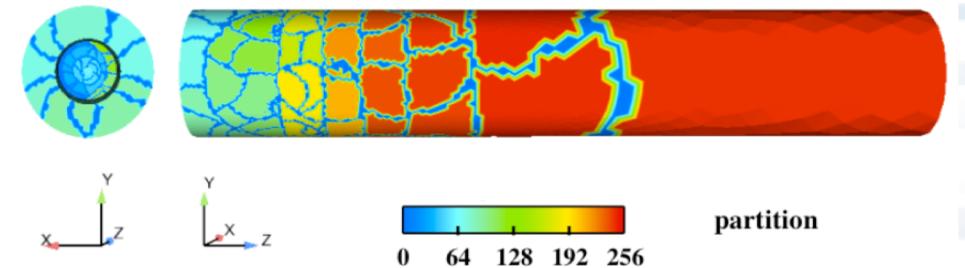
Scientific Field | Computational Fluid Dynamics

Research Interests

- Two-phase Flows
- High-Performance Computing
- Partitioning Algorithms

Personal Interests

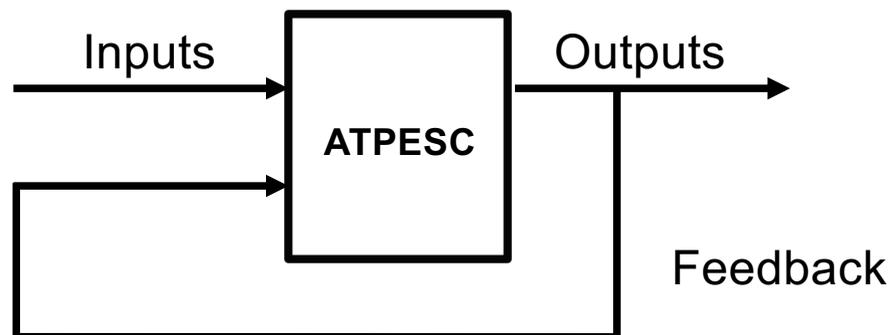
- Reading
- Traveling



Feedback

Help us improve the training program

- Track evaluations
- Overall program evaluation
- Conversations or emails to any of us



- **Tour of Argonne**
- **More hands-on exercises during lectures**
- **Participant introductions**

Whom to ask for help on-site

- **Administration**

- Office: Virginia Doyle, Monica White & Julie Smagacz (week 1)
Karen VanMeerten (week 2)

Or by email to your ATPESC Contact Person

- **Computing issues**

- **User Services:** Robert Scott / Haritha Som
- **Operations:** Adam Scovel / Ben Lenard / Mark Fahey / Frank Willmore / Gordon McPheeters

Or by email to support@alcf.anl.gov

- **General**

- Email: support@extremecomputingtraining.anl.gov

Acknowledgments

Exascale Computing Project



EXASCALE COMPUTING PROJECT

Website: <https://exascaleproject.org>

This training and research was supported by the Exascale Computing Project (17-SC-20-SC), a collaborative effort of the U.S. Department of Energy Office of Science and the National Nuclear Security Administration.

Acknowledgments

- This research used resources of the **Argonne Leadership Computing Facility**, which is a DOE Office of Science User Facility supported under Contract DE-AC02-06CH11357
- This research used resources of the **Oak Ridge Leadership Computing Facility** at the Oak Ridge National Laboratory, which is supported by the Office of Science of the U.S. Department of Energy under Contract No. DE-AC05-00OR22725
- This research used resources of the **National Energy Research Scientific Computing Center**, a DOE Office of Science User Facility supported by Office of Science of the U.S. Department of Energy under Contract DE-AC02-05CH11231



EXASCALE COMPUTING PROJECT

Thank you for your attention!

& for taking two weeks of your summer to participate in this program

Questions ? ? ? ? ?

