

National Radio Science Meeting

- ◆ January 9-12, 2019 ◆ University of Colorado at Boulder
- ◆ Meeting website: www.nrsmboulder.org
- ◆ USNC-URSI website: www.usnc-ursi.org



The National Academies of
SCIENCES • ENGINEERING • MEDICINE



LOGISTICAL INFORMATION

Program Information

The USNC-URSI National Radio Science Meeting will begin on Wednesday, January 9, 2019 with registration beginning at 07:30 and presentations at 08:20. It will end on Saturday, January 12. (Saturday will only be scheduled as a day for conference presentations if necessary to accommodate the number of accepted papers.) The complete 2019 NRSM technical program will be available by December 1, 2018 on our meeting website at www.nrsmboulder.org. For administrative or logistical information about the meeting, please contact Christina Patarino, CU Conference Services, christina.patarino@colorado.edu, 303-492-5151.

Scope of Meeting

All ten Commissions of USNC-URSI, listed below, will participate in the meeting. (To learn more about USNC-URSI, please visit www.USNC-URSI.org.)

- Commission A: Electromagnetic Metrology
- Commission B: Fields and Waves
- Commission C: Radio-Communication Systems and Signal Processing
- Commission D: Electronics and Photonics
- Commission E: Electromagnetic Environment and Interference
- Commission F: Wave Propagation and Remote Sensing
- Commission G: Ionospheric Radio and Propagation
- Commission H: Waves in Plasmas
- Commission J: Radio Astronomy
- Commission K: Electromagnetics in Biology and Medicine

Steering Committee

- Sembiam R. Rengarajan, USNC-URSI Chair
- Michael H. Newkirk, USNC-URSI Secretary/Chair-Elect
- David R. Jackson, USNC-URSI Immediate Past Chair
- Christina Patarino, University of Colorado Boulder Conference Services

Technical Program Committee

- Sembiam R. Rengarajan, USNC-URSI Chair, srengarajan@csun.edu
- Michael H. Newkirk, USNC-URSI Secretary/Chair-Elect, michael.newkirk@jhuapl.edu
- David R. Jackson, USNC-URSI Immediate Past Chair, djackson@uh.edu
- Gary S. Brown, USNC-URSI Accounts Manager, randem@vt.edu

- Commission A: Jeanne Quimby, jeanne.quimby@nist.gov
- Commission B: Jamesina Simpson, jamesina.simpson@utah.edu
- Commission C: Eric L. Mokole, emokole@mitre.org
- Commission D: Negar Ehsan, negar.ehsan@nasa.gov
- Commission E: Larry Cohen, lawrence.cohen@nrl.navy.mil

Commission F: Kamal Sarabandi, saraband@umich.edu
Commission G: Attila Komjathy, attila.komjathy@jpl.nasa.gov
Commission H: Robert C. Moore, moore@ece.ufl.edu
Commission J: Jeff Mangum, jmangum@nrao.edu
Commission K: Majid Manteghi, manteghi@vt.edu

Commission Business Meetings

Commission Business Meetings are open to all attendees. Each attendee is welcome and strongly encouraged to attend at least one Commission Business Meeting, even if you are not an official member of the Commission. The tentative schedule of the Commission Business Meetings is provided below.

Commission A: Wednesday, January 9, 18:00
Commission B: Thursday, January 10, 17:00
Commission C: Wednesday, January 9, 18:00
Commission D: Thursday, January 10, 18:00
Commission E: Wednesday, January 9, 17:00
Commission F: Wednesday, January 9, 17:00
Commission G: Thursday, January 10, 17:00
Commission H: Thursday, January 10, 18:00
Commission J: Wednesday, January 9, 18:00
Commission K: Thursday, January 10, 18:00

Special Meetings

- USNC-URSI Business Meeting, Tuesday, January 8, 17:00 - 21:30, Marriott Boulder Hotel.
- Special Historical Talk on Lise Meitner, Wednesday, January 9, 12:15-13:15, Mathematics Auditorium (Math 100).
- Plenary Session and Student Paper Competition, Thursday, January 10, 08:20 -12:00, Mathematics Auditorium (Math 100).
- Sixth Annual Hans Liebe Lecture, Friday, January 11, 12:15-13:15, Mathematics Auditorium (Math 100).
- USNC-URSI Executive Council Meeting, Saturday, January 12, 08:00 – 11:00, Marriott Boulder Hotel.

Persons wishing to organize other affiliated meetings should contact Christina Patarino, CU Conference Services: phone 303-492-5151, email christina.patarino@colorado.edu.

Location of Sessions

All scientific sessions will be held at the University of Colorado Boulder in the Engineering Center and Mathematics Auditorium. The Plenary Session, the Lise Meitner Historical Talk, and the Hans Liebe Lecture will be held in the Mathematics Auditorium.

Registration Periods

Early Registration: September 1 – December 16
Regular Registration: December 17 – January 1
Onsite Registration: January 8 – January 11

Fees

Registration fees will be required from all participants including URSI officials, session chairs, authors and attendees. The fee includes the reception (beer and wine included), attendance at all sessions, refreshment breaks, and the meeting USB drive. Extra USB drives will be available at \$20 per copy.

| | Early Bird through 12/16 | Regular beginning 12/17 |
|--------------------------------|-----------------------------|----------------------------|
| Member Registration* | \$425.00 | \$450.00 |
| Non-Member Registration | \$450.00 | \$475.00 |
| Student & Retiree Registration | \$150.00 | \$200.00 |

*The Member rate is reserved for those attendees who are a member (Full Member, Associate Member, or Early Career Member) of one or more Commissions of USNC-URSI. If you wish to apply for membership in a Commission of USNC-URSI, please go to <http://www.surveygizmo.com/s3/1310107/USNC-URSI-Membership-Application> and complete the online application form. Membership applications will be reviewed at the relevant Commission business meetings; however, applying for membership before registering for the meeting is sufficient to allow you to register at the member rate.

Please note that the University of Colorado does not accept purchase orders. If we have no record of payment at registration, we will require payment at that time. We cannot bill for registration fees.

Early Registration

All attendees are encouraged to pre-register online for the conference during the early registration period. Pre-registration is available during the early and regular registration periods. Payment may be made by check, VISA, MasterCard, American Express, or Discover. To pre-register online, please use the online registration form available through the USNC-URSI meeting website at www.nrsmboulder.org.

Regular Registration

Pre-registration is also available online during the regular registration period, though the fees are higher. After the end of the regular registration period, pre-registration will close and registration will only be accepted on site. The regular registration instructions are the same as for early registration. However, if you want to pay by check, please fax (303-492-5959) your registration form and bring the check with you.

Onsite Registration

Pre-meeting registration will take place at the Best Western Boulder Inn on Tuesday, January 8, from 16:00 to 21:00. The main registration for participants will be in the Engineering Center main lobby from 07:30 to 09:30 on Wednesday, January 9, and will continue during the remainder of the meeting in the Engineering Center (ECCR), Room 131.

Refunds

There will be no refunds after the cut-off date of December 17, 2018. Cancellation requests must be sent to conferences@Colorado.edu or faxed to 303-492-5959. Refunds granted by December 17 will be assessed a \$100 processing fee. Students and retirees will receive a full refund. Due to costs incurred by USNC-URSI prior to the conference, unforeseen events prohibiting travel will not be sufficient cause for a refund.

Meeting Office

Meeting headquarters will be in Engineering Center (ECCR), Room 131, from 11:00 am, Wednesday, January 9, through the conclusion of the meeting.

Telephone and Mail

Telephone messages can be arranged by calling 303-492-5151. Be sure to have callers mention the National Radio Science Meeting. Messages will be posted in the lobby of the Engineering Center. Mail should be addressed to:

CU Conference Services, (Name of participant), URSI NRSM, 454 UCB, Boulder, CO 80309.

Audio/Visual Equipment

For this conference, each room will contain the following audio/visual equipment for your use: an LCD (computer) projector (for PowerPoint or PDF format presentations) and an overhead projector on request for transparencies. All materials should be prepared with clarity and visibility in mind. **Please remember to embed all fonts in PowerPoint and PDF presentations.** Oversized, bold lettering and heavy lines are recommended. Speakers should meet session chairs at least 20 minutes before the scheduled start of the session to load their presentations on the PC laptops in the presentation rooms. **The use of personal laptops is not permitted.**

Transportation to Boulder

All major airlines have flights into Denver International Airport (Airport code DEN, locally called DIA). A variety of surface transportation is available from DIA to Boulder.

The Regional Transportation District SkyRide (RTD city bus route "AB") is the least expensive and departs from Level 5 of DIA approximately on an hourly basis and travels to Boulder via Denver and U.S. 36. Travel time is approximately 90 minutes. Tickets may be purchased at the RTD sales counter, located on Level 5 or with exact fare on the bus. Once in Boulder, exit at the Boulder terminal and take a taxi or city bus to your hotel. [RTD Bus Schedule](#).

Green Ride shuttle is a locally owned and operated shuttle service that focuses on resource sustainability and minimizing environmental impact. It is recommended that you make a reservation online via the following website for outgoing service from DIA to Boulder: [Green Ride Reservations](#). Green Ride departs from east side of Level 5 (main level/baggage claim level) of DIA outside door 511, at island 5, beneath the "Special Permit" signs. Trip times can vary due to traffic. You will receive a confirmation call the night before with a best estimate.

SuperShuttle provides transport from the airport to most local hotels: [SuperShuttle Reservations](#). Once in the terminal of the airport, follow the signs to Level 5 Baggage Claim and collect your luggage. Proceed to the SuperShuttle ticket counter to speak with a uniformed Customer Service Representative. The ticket counter is located between the women's restroom and the ground transportation booth on the southwest side of the terminal. The ticket counter is staffed from 6:00 AM to 11:30 PM daily. If for any reason you need assistance locating a representative, or if you have any questions, please use the courtesy phone located at the ticket counter to connect directly to dispatch for further assistance.

Rental cars are available at the airport. We do suggest advance reservations. Boulder is located 26 miles northwest of Denver via U.S. 36. If you decide to take a taxi from the airport, be sure to agree upon the fare with the driver prior to departure from the airport. The fare to Boulder is typically \$80 - 110 depending on the company.

Parking

Virtual parking permits are NOW available for purchase online. Please follow the instructions below to purchase your permit:

1. Go to our Parking Services website: <https://www.colorado.edu/pts/event-parking>
2. Click on the blue button at the top of the page that reads “**Click to purchase Event & Conference Parking**”
3. You will be directed to a page with all of our event parking groups. Please select the group that you are with: **USNC-URSI NRSM**.
4. The \$17 rate offered is a discounted weekly parking permit rates for the dates of the NRSM.
5. Complete the purchase and print a copy of your permit/receipt. Please display the printed copy on your dashboard as a backup confirmation of your virtual permit. **This is not required**, but will help the parking patrol team determine if you accidentally made a typo in your license plate number.
6. Please note the specific lot number that you have been assigned to. You must park in the lot assigned to you at the time of purchase. **All sales are final.**

Please note that **enforcement will be handled through the license plate number**. You will **need to have vehicle make/model/color/plate information at the time of purchase**. You must have this information in order to purchase the virtual permit. Please ensure that all information provided is accurate to avoid a citation. For those renting vehicles, follow the above process once you have secured the vehicle in order to have information needed to complete purchase.

Accommodations

Participants must make their own housing arrangements. Blocks of rooms have been set aside at the hotels listed below, and special group rates have been arranged. Please see below for each hotel’s cut-off date for the special group rate. Be sure to mention “URSI” in all communication with the hotels as the special group code. Please make reservations as soon as possible.

Marriott Boulder Hotel

- \$155.00* Single/Double
- 2660 Canyon Blvd., Boulder, CO 80302
- *Reservations ONLY by link:* [Book your group rate for USNC-URSI](#)
- Group rate cut-off: *Saturday, December 8*

Best Western Boulder Inn

- \$119.00* Single King (Includes continental breakfast with hot items.)
- 770 28th Street, (303) 449-3800 or (800) 233-8469
- Reservation link: [Best Western Reservation Link](#)
- Group rate cut-off: *Saturday, December 8*

Embassy Suites

- \$152.00* single/double (Includes breakfast & evening reception.)
- 2601 Canyon Boulevard
- Reservations ONLY by link: [Embassy Suites By Hilton Boulder](#)
- Group rate cut-off: *Tuesday, December 18*

Hilton Garden Inn

- \$132.00* single/double
- 2701 Canyon Boulevard
- Reservations ONLY by link: [Hilton Garden Inn Boulder](#)
- Group rate cut-off: *Tuesday, December 18*

Millennium Harvest House Hotel

- \$119.00/\$129.00* Single/Double (King Only) (Includes breakfast.)
- 1345 28th Street, (303) 443-3850 or (800) 545-6285
- Reservation Link: [1901URSIRA](#)
- Group rate cut-off: ~~*Saturday, December 8*~~ ***EXTENDED to Monday, December 31***

Rodeway Inn & Suites (Boulder Broker Hotel)

- \$72.00* single (Includes continental breakfast with hot items.)
- 555 30th Street, (303) 444-3330 or (800) 338-5407
- Reservation Link: TBD
- Group rate cut-off: *Wednesday, January 9*

*Hotel rates are subject to change without notice by the hotel, and do not include a 12.485% lodging tax. The University of Colorado assumes no obligation regarding rates. Taxes are subject to change.

Meals

A list of local restaurants for lunch will be available at registration. Meal cards for lunch in the University Memorial Center at the Alferd Packer Grill are available for **pre-purchase with registration** for Wednesday - Friday for an additional \$10.00 per meal. If you plan to attend the *Special Historical Talk on Meitner* on Wednesday, January 9 or the *Hans Liebe Lecture* on Friday, January 11, a box lunch will be available for **pre-purchase only**, at a cost of \$15.00; this is recommended since the lecture is over the lunch hour. (Note for Students: Lunch will be provided for student travel awardees and student paper finalists on Thursday, January 10, so those students should not purchase a meal card for that day.)

Reception

A reception (beer & wine provided) will be held in the lobby of the Engineering Center (ECCR) on Wednesday, January 9, from 18:30 to 21:00. The cost of the reception is included in the registration fee. **Please note that guests are welcome to attend, but you must indicate on the registration form that you will be bringing a guest. Otherwise, they will not be allowed to attend, due to the alcohol policy of the university.**

Weather

Boulder's weather in January is notorious for its unpredictability and can range from snow and freezing temperatures to mild, balmy weather with temperatures near 60°F (16°C). Normally, however, the weather is sunny and rather cool (40°F or 4°C) during the month, with little snow. Participants should bring appropriate clothing.

Recreation

Participants and their families may use the University's Recreation Center, which includes handball and squash courts, tennis courts, swimming and diving pools, an indoor ice rink, exercise rooms, gymnasiums, and saunas for a nominal fee. Further information will be available at the meeting registration desk.

Refreshments

Refreshments will be available during the coffee breaks from 10:00 to 10:20 during the mornings and from 15:00 to 15:20 during the afternoons in the main lobby of the Engineering Center.

University of Colorado Boulder and Sustainability

The University of Colorado Boulder (CU-Boulder) has a long history of global leadership in sustainability. From being the first university to establish a recycling program, to being the first university to rank "gold" through the [Sustainability Tracking Assessment and Rating System \(STARS\)](#), CU-Boulder has been a leader in climate and energy research, interdisciplinary environmental studies programs and in engaging in "green" practices on campus for more than half a century. We invite you to be a part of the CU sustainability initiatives and participate in one or more of these green practices:

- Purchase carbon offsets for your air travel:

The conference organizers are committed to making this conference a sustainable event. CU Conference Services has collaborated with the Environmental Center at the University of Colorado Boulder to allow conference attendees to purchase carbon-offset credits.

The purchase of carbon offsets represents a reduction in emissions from a specific energy project to offset those created by air/auto travel to attend the conference. These carbon emission reduction projects would not be possible without the financial resources that the purchase provides. Recent projects include landfill methane capture for use as fuel for a local brick factory in Oklahoma; coal bed methane capture, new trucking efficiencies, and rooftop solar water heater installation on affordable housing in Colorado. For more information on the University's carbon offset program, please visit the [Environmental Center Website](#). These carbon offsets are available for purchase at an additional cost, based on attendee travel, **on the conference registration form**.

- **Bring a travel coffee mug and a re-fillable water bottle** for use while at CU Boulder.
- Look for the compost and recycling bins provided for your use at the zero-waste breaks during the Conference.

Further Information

For further information, contact CU Conference Services, University of Colorado Boulder, 454 UCB, Boulder, CO 80309-0454. or call 303-492-5151, fax 303-492-5959, e-mail christina.patarino@colorado.edu, or access the USNC-URSI meeting website at www.nrsmboulder.org.