

Call for Participation
5th mmW RCN Workshop
NSF Research Coordination Network on Millimeter Wave Wireless
North Carolina State University
January 28-29, 2019
<https://mmwrcn.ece.wisc.edu>

Millimeter-wave (mmW) wireless is the focus of intense current research in academia and industry for achieving multi-Gigabit data rates and low latency as part of the emerging vision for 5G wireless networks and beyond. This NSF-sponsored research coordination network (RCN) aims to spur research and development of mmW wireless, driven by innovations in three key areas:

- 1) CSP: communication and signal processing techniques;
- 2) HW: mmW hardware, circuits, antennas, and digital hardware; and
- 3) NET: wireless networking;

along with mmW prototypes and testbeds. The RCN aims to engage academic and industrial researchers as well as stakeholders from the US government agencies to facilitate cross-fertilization of ideas, identification of challenges and strategies to address them, and to guide the development of mmW wireless technology and standards. The RCN is led by the University of Wisconsin and includes a steering committee of sixteen leading researchers in the area of mmW wireless technology from academia and industry, including international representatives.

Fifth RCN Workshop: A key mechanism for interaction between RCN members and participants from the wider mmW research community is through two workshops each year. The [kickoff workshop](#), held in Dec 2016, generated several exciting ideas for cross-disciplinary collaborations. The [second workshop](#), held in July 2017, further developed the research and technology roadmap at the intersection of HW-CSP and CSP-NET areas, and prototypes and testbeds. The [third workshop](#) continued the development of research ideas at the two interfaces, and also included a very fruitful discussion of synergistic opportunities at the Interface of 802.11ad/ay and 5G New Radio (NR) standards. Building on the momentum, the [4th workshop](#) explored the development of community prototypes and testbeds for research and experimentation, as well as a platform for end-to-end simulation of mmW wireless networks. The [5th workshop](#) at NC State University in January 2019 will provide an avenue to further develop the following research themes:

- Research ideas and demonstration concepts at the interface of CSP-HW and CSP-NET areas, including new channel and measurement models.
- Integration of channel models into system-level and network-level design and simulation.
- Combining measurements and ray tracing for accurate channel models.
- Research issues driven by mmW standards, including 5G NR (new radio), WiGig, and 802.11ay.
- Spectrum sensing, sharing, and access issues.
- Innovations in prototype and testbed development (especially lower cost approaches).
- Research ideas and challenges for mmW wireless at frequencies above 40 GHz (40-300GHz).
- The role of machine learning techniques in system design and optimization.
- System- and network-level analysis of integrated fixed wireless, backhaul, and access networks.
- New and emerging use cases, including AR/VR, vehicular networks, and drone-based networks.
- Synergistic approaches from other applications such as imaging, radar and sensing.
- “Moonshot” problems (5-year and 10-year timeframe) for active academic-industrial collaboration.

Participation & White Papers: Prospective participants are invited to submit a one-page white paper outlining their research plans and/or demonstration concepts relevant to mmW wireless, including a brief description of their background in the area. Accepted white papers will be presented as posters and/or

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demos at the workshop. The authors are encouraged to consult the agenda, posters and reports from the previous workshops at https://mmwrcn.ece.wisc.edu/?page_id=4. The white papers must include a tentative title and list of authors and be submitted in **pdf format** to mmwrcn@ece.wisc.edu. Submissions from postdoctoral and early-career researchers as well as researchers from under-represented groups are strongly encouraged. Limited funding is available to support the travel cost of US academic researchers, including a few international participants, for selected white papers. **Please indicate in your white paper if you will be unable to attend without travel support.** Participants without white papers, especially from industry, are encouraged to attend, subject to space availability. Please see the workshop page for registration and logistical information; https://mmwrcnece.wiscweb.wisc.edu/?page_id=1594

Important Deadlines:

Nov 16, 2018: one-page white paper submission

Nov 28, 2018: notification of white paper selection

Dec 7, 2018: workshop registration deadline (for accepted white papers)

Dec 21, 2018: travel (air and hotel) reservation deadline (for attendees with RCN travel support)

Organizers:

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