Penn ARC
University of Pennsylvania Amateur Radio Club

W3KZ Wireless Luncheon

University of Pennsylvania Amateur Radio Club
Date: October 18, 2025
Location: Levine Hall + Zoom

Attendees

Speakers & Organizers

- **Jefferson Ding '27, VA3JFO** – President, UPARC
- **John Campbell** – UPARC & Penn Alumni
- **Bob Josuweit, WA3PZO** – Holmesburg ARC / WM3PEN Trustee
- **Cliff Hotchkiss, KC3PGT** – Philadelphia County ARES / SEPA Red Cross
- **Ginger & Chris** – Philly Mesh / Meshtastic
- **Buzz Beitchman, W3EMD** and **Gene, W3BWI** – UPARC Alumni

Other notable attendees

- Jim Talens, N3JT (Trustee)
- Kay Craigie, N3KN
- Jeff, WN3A (Past UPARC President)
- Dennis Silage, K3DS (MARC / Temple)
- Perry Klein, W3PK (AMSAT)
- Bob K3RF (ARRL Atlantic Division Director)
- Multiple Penn alumni, HARC members, ARES operators, Philly Mesh contributors, and regional clubs (Villanova, MARC, Warminster, Bucks County, HamSCI, etc.)

Meeting Summary

1. Welcome

- Reintroduced UPARC mission: blend of **amateur radio, research, emergency communications, and experimentation**.
- Shared personal journey into ham radio during COVID and building school clubs.
- Positioned UPARC as a bridge between **students, alumni, and the regional ham ecosystem**.
- Emphasized that amateur radio today spans:

    - RF + software
    - SDR, mesh, satellites
    - Citizen science and emergency response
    - AI in wireless communications

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2. UPARC & W3KZ Overview

- W3KZ founded in **1909**, one of the oldest university radio clubs.
- Historical role in **emergency communications**, including:
    - 1977 Johnstown Flood
    - Vietnam-era Coast Guard message passing
- Evolution from Morse and voice to:
    - Repeaters, linked systems, satellites
    - Computers, SDR, mesh networking
- Current equipment:
    - Yaesu FT10dx, ICOM 705s, ICOM 9700
    - Remote access, SDR, mesh experiments
- Campus presence:
    - HARC partnership at **3901 Locust Walk**
    - Existing antennas and plans for **new campus antenna projects**
- Call to action:
    - Need **operators and builders**
    - Goal to modernize campus infrastructure

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3. Activities & Opportunities

- Recent real-world operations (Oct 3–18):
    - Limerick Nuclear Power ARES deployment
    - Earthquake drill
    - High-altitude balloon launch
    - AMSAT conference
    - NVIS net
- Ongoing and planned activities:
    - Field Day
    - POTA/SOTA activations
    - High-altitude balloons
    - Meteor and airplane scatter
    - Eclipse special event stations
    - ARES emergency drills
    - Satellite workshops
    - HamSCI experiments

    - SDR hackathons
- Makerspace focus:
    - YAGIs, dipoles, mesh antennas
    - SDR tools, LoRa sniffers
    - Solar-powered nodes

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5. History & Future (Bob WA3PZO)

- Detailed history of UPARC and HARC collaboration.
- 1977 flood response led to long-term Penn-HARC repeater partnership.
- Revival cycles in 2000s:
    - Alumni reactivated club and contesting
    - Cross-college participation (Drexel, Villanova)
- Key message:
    - Amateur radio is not the end goal; it is a **license to experiment**.
    - Gateway to:
        - GNU Radio
        - SDR
        - Radar, SIGINT, adaptive comms
        - Satellite and space systems
- Refrain: *“Ham Radio is a Contact Sport.”*

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6. Emergency Communications (Cliff KC3PGT – ARES & Red Cross)

- Philadelphia County ARES:
    - ~25 members across 5 counties
    - 3-tier system (Training, Deployment, Leadership)
    - FEMA, ARRL, Skywarn, public service training
- Unique model:
    - Philly ARES serves **SEPA Red Cross**, not county EOC
    - Members must be Red Cross volunteers for liability coverage
- Red Cross DST (Disaster Services Technology):
    - Supports ARC volunteers, not victims directly
    - Goal: 1 comms specialist per sheltering team
- Assets:
    - Comms trailer
    - Go-kits
    - HF/VHF/UHF radios
    - LiFePO4 batteries
    - Portable antennas
- How to join:

    - Weekly net: Sundays 8pm on W3QV
    - Monthly drills
    - Virtual meetings
    - HF NVIS net every third Thursday

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7. Mesh & LoRa (Ginger Mesh & Chris Casper)

- Introduced **LoRa** and **Meshtastic**:
    - Long-range, off-grid, low-power
    - Secure, low-cost, interference-resistant
- Meshtastic:
    - Nodes form self-healing mesh
    - Messages hop automatically
    - Phone apps connect via Bluetooth
- Hardware:
    - $20–$70 nodes (T-Beam, Heltec, LilyGO, WisBlock, etc.)
    - ESP32 vs NRF52 tradeoffs
- Philly Mesh:
    - ~80 active nodes
    - Strong Center City coverage
    - Growing north and west
- Regional expansion:
    - Susquehanna Valley Mesh
    - Tower network planning
    - Future services: weather alerts, SAR tracking
- Call to action:
    - Join PhillyMesh.net
    - Participate in Discord communities

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8. Alumni Reflections

- Alumni shared:
    - How ham radio shaped careers in RF, software, and research
    - Value of hands-on experimentation
    - Importance of intergenerational continuity

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9. Action Items & Follow-Up

- Students:

    - Join UPARC via interest form
    - Attend nets and build nights
    - Get licensed
- Alumni & Community:
    - Mentor students
    - Support antenna and mesh projects
    - Provide equipment and site access
- Near-term goals:
    - Campus antenna upgrades
    - Mesh deployment on and near campus
    - Integration with ARES and Red Cross training