AUDEAMUS GROUP, LLC

Wi-Fi Sensing Weekly Brief

NOVEMBER 6, 2026 | GROUP INTELLIGENCE

THIS WEEK'S JUDGMENT

October 30-November 6, 2026. Three new preprints met the relevance, date, and evidence checks. The strongest result uses evidence-driven scheduling to detect brief human motion with fewer sensing transmissions. Two hardware-oriented studies show that useful motion features can come from fixed 60-GHz communication beams and that a switched four-chain Wi-Fi array may approach an eight-channel reference in simulation. No material standards or regulatory update was verified this week. The commercial signal is lower-complexity sensing; the privacy implication is that lighter sensing paths make continuous ambient inference easier to embed and harder to notice.

NEW RESEARCH

01 / OCTOBER 30, 2026 / ARXIV PREPRINT / PREREGISTERED SIMULATION WITH OPEN CODE

Sense Less, Miss Less: Evidence-Driven Sensing Schedules for ISAC

What changed. Natanzi and Tang adapt data-efficient cumulative-sum change detection to OFDM sensing. Their scheduler skips sensing looks when measurements favor a quiet scene, resumes them when evidence builds, and explicitly models blocked requests, delivery delay, false alarms, and a 200-millisecond detection deadline for brief limb motion.

Reported performance. At matched monitoring cost and below one false alarm per minute in the main simulated test, the adaptive schedule produces 1.5-4.2 times as many timely detections as periodic bursts across 10%, 5%, and 2.5% sensing budgets. A separately preregistered two-rate trigger performs similarly.

Why it matters. The paper treats sensing time as a network resource rather than assuming a continuous CSI stream. Its paired tests, preregistration, open implementation, and explicit accounting for scheduler rejection make it unusually useful for teams designing always-on motion detection under airtime or power limits.

Evidence limits. This is a 3.5-GHz cellular ISAC simulation, not a Wi-Fi deployment. It uses one antenna, an ellipsoid body model, independent busy slots, and no measured human channel. In the multipath transfer, false alarms rise and costs no longer match without recalibration; at the lowest budget, even the best schedule misses most events.

Verdict. READ IN FULL. Read the method and evidence design because it exposes a practical scheduling tradeoff that Wi-Fi sensing products will also face, while keeping the simulated evidence boundary clear.

Open original source

© 2026 Audeamus Group, LLC. All rights reserved. This report is the property of Audeamus Group, LLC and reflects solely its opinions. It is for informational purposes only and must not be relied upon as legal or investment advice. Third-party materials remain the property of their respective owners.

02 / NOVEMBER 4, 2026 / ARXIV PREPRINT / 60.8-GHZ EXPERIMENT

Human Mobility Sensing Using Wall-Reflected Beamformed Millimeter-Wave Communication Signals

What changed. DiMichele et al. classify walking pace and travel direction from low-rate received-power changes on a wall-reflected 60.8-GHz link. The method uses fade duration and asymmetry around the fade from fixed communication beams, without channel estimation, Doppler processing, or a radar waveform.

Reported performance. Across 144 crossings by three people, leave-one-participant-out logistic regression reaches 86.1% for fast-versus-nonfast pace, 79.2% for three pace classes, and 77.1% for direction. Results vary by perpendicular versus diagonal walking geometry.

Why it matters. Useful mobility features emerge from received-power telemetry that a directional link may already expose. That can reduce sensing compute and integration cost, but it also broadens privacy review beyond raw CSI because a comparatively simple power trace can reveal behavior.

Evidence limits. The proof of concept covers three participants, one short-range setup, two known crossing geometries, and a continuous-tone experiment rather than packetized data traffic. Feature comparisons are exploratory, the power trace cannot resolve scattering paths, and the study does not test homes, stationary presence, multiple people, or data-bearing beams.

Verdict. SKIM. Skim for the low-complexity sensing path and the geometry-dependent error pattern; wait for data-bearing links and broader subjects before treating it as deployable.

Open original source

03 / NOVEMBER 2, 2026 / ARXIV PREPRINT / NUMERICAL ARRAY STUDY

A Beam-Switched Sparse Circular Array for Passive Wi-Fi Sensing

What changed. Chen et al. propose two angularly staggered four-element circular-array bases and combine their angle spectra to suppress grating-lobe ambiguity. The architecture targets the four receive chains common in Wi-Fi access points while preserving a larger aperture for full-azimuth passive sensing.

Reported performance. In numerical tests, the beam-switched design reduces the 0-dB dynamic-tracking outlier rate from 42.7% for a directional four-element circular array to 15.7%. Its outlier curve approaches an omnidirectional eight-element reference and reaches zero at 7.5-dB SNR in the stationary-target Monte Carlo test.

Why it matters. The design identifies a plausible antenna path to wider-angle passive Wi-Fi tracking without eight simultaneous RF chains. If validated in hardware, it could improve sensing coverage in access points while keeping radio-chain cost closer to existing products.

Evidence limits. All results are numerical. The study uses single-snapshot, single-carrier observations, a single target, modeled element patterns, and a 20-Hz simulated tracker. It does not build the switched array or test switch timing, calibration, indoor multipath, human targets, packet traffic, or interference.

Verdict. TRACK ONLY. Track the architecture because the four-chain constraint is commercially relevant, but require a measured prototype before relying on the reported outlier reduction.

Open original source

STANDARDS AND REGULATORY WORK

No material in-window update was verified from IEEE 802.11, Wi-Fi Alliance, IETF, NIST, FCC, FTC, or other regulators. IEEE 802.11bi-2026 remains the most recent relevant privacy amendment and was covered in the October 30 edition.

© 2026 Audeamus Group, LLC. All rights reserved. This report is the property of Audeamus Group, LLC and reflects solely its opinions. It is for informational purposes only and must not be relied upon as legal or investment advice. Third-party materials remain the property of their respective owners.