

## Kongres Container

# Integrated base station fusion communication platform



## Overview

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Can a programmable metasurface build a smart base station framework for 6g?

Here, we propose a large-scale 2-bit millimeter-wave programmable metasurface to build an integrated smart base station framework for 6G communications. The meta-array is composed of  $30 \times 30$  meta-elements, each with two embedded positive-intrinsic-negative (PIN) diodes.

Why is beamforming a good base station auxiliary equipment?

The signal energy boosted in the specified direction guarantees communication speed and data integrity. This verifies that the proposed system has an excellent beamforming capability to act as good base station auxiliary equipment that can cover a wide angle range of  $\pm 70^\circ$  in the upper half-space. Figure 7.

How can data-level fusion extend the sensing range?

sing results are aggregated into the cloud layer for data-level fusion to extend the sensing range. Multi-node cooperation: Multiple nodes including UEs, macro BSs and micro BSs could participate in cooperative sensing to improve the sensing accuracy and range wit.

What is symbol-level fusion method of multi-BS sensing information?

Besides, a symbol-level fusion method of multi-BS sensing information is proposed. The discrete samplings of echo signals from multiple BSs are matched independently and coherently accumulated to improve sensing accuracy.

What are the levels of sensing information fusion?

sing. The levels of sensing information fusion consist of data-level fusion and signal-level fusion. Data-level fusion: Data-level fusion is the fusion of sensing results from multiple BSs, which has low complexity. Data-level fusio.

How can a millimeter-wave base station improve real-time information transmission?

Finally, the proposed metasurfaces help the millimeter-wave base station to realize real-time information transmission of multi-users with different directions in a realistic indoor scenario. The experimental results demonstrate that the new beamforming base station system can intelligently enhance or attenuate signals in specific target areas.

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