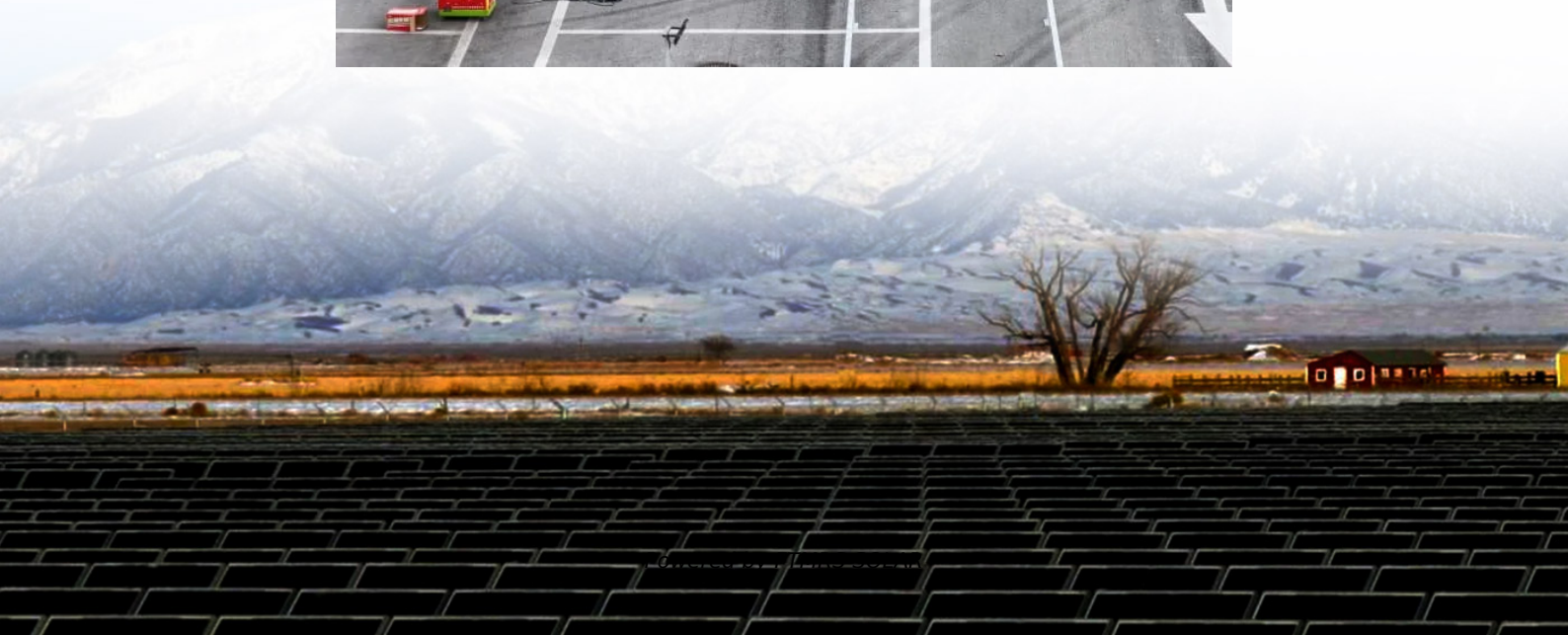


# **Outdoor base station transformation plan brief**





## Overview

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Due to the high propagation loss and blockage-sensitive characteristics of millimeter waves (mmWaves), constructing fifth-generation (5G) cellular networks involves deploying ultra-dense base stations (BS).

How does base station coverage optimization work?

Therefore, the base station coverage optimization method proposed in this paper effectively mirrors real-world scenarios, visually exposes signal blind spots, and accurately identifies instances where users cannot connect to base stations due to complex environmental factors such as high-rise obstructions or areas beyond the coverage range. Fig. 9.

How to optimize base station layout?

Moreover, we propose a dynamically adjusted quantum genetic algorithm (DAQGA) to optimize base station layout, with coverage and construction cost as objective functions. A signal reception strength metric is introduced to evaluate the effectiveness of the optimal layout.

How does a base station deployment method optimize the base station layout?

The base station deployment method proposed in this study dynamically optimizes the base station layout based on annual environmental change characteristics.

Why are base stations important?

As critical nodes in wireless network connectivity, base stations, if not deployed with foresight and scientific planning, may not only lead to resource wastage, but also cause signal interference, directly affecting network coverage, signal quality, and user experience, thereby increasing the complexity of network management and operational costs.



## Outdoor base station transformation plan brief

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Cost savings and efficiency: Embracing outdoor base stations eliminates the need for expensive shelters and air conditioning units, resulting in significant cost savings in infrastructure setup ...

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