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Abstract
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Research Letter

A Novel Beamforming Technique for Highways Coverage Using High-Altitude Platforms

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Abstract

This paper proposes a novel beamforming technique to form an arbitrary-shaped cell for the high-altitude platforms (HAPs) mobile communications. The new technique is based on pattern summation of individual low sidelobe, narrow beams which constitute the desired cell pattern weighted by an amplitude correcting function. The new cell pattern can be adapted to cover the main highways forming worm-shaped cells which may cover the highway for long distances up to 100 km and it will have an important role in reducing frequent handoffs and signaling traffic of location updating from moving users over the long highways.