Analysis and Optimization of Terahertz Bolometer Antennas

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***Abstract*— Bolometer antennas are required to have not only a large gain–bandwidth product but also a fast heating rate suitable for video rate operation. However, while the gain–bandwidth product of an antenna increases with the fraction of the antenna bulk volume occupied by its enclosing sphere, its heating rate decreases. In this paper, we show that for a typical heating rate requirement, wire antennas such as dipole and bow-tie antennas are preferable over planar antennas such as triangular and pentagonal antennas. More complex bent-wire antenna geometries achieved by a genetic algorithm are shown to yield better performance.**

***Index Terms*— Antennas, bolometer, genetic algorithm (GA), terahertz (THz).**