Polarisation agile active microstrip patch arrays

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Two three-element polarisation-agile active microstrip patch arrays have been developed. The radiating elements are square patches each with two transistors mounted on adjacent edges. The patches radiate orthogonal modes, the relative phase of which can be varied. Radiation patterns show good agreement with predictions from theory, in both linear and circular polarisation, and no grating lobes were observed.

Introduction: In [1] we demonstrated polarisation agility in an antenna comprising two injection-locked diode-tuned printed oscillators, radiating orthogonal components. However, this arrangement is impractical for array applications owing to the noncoincident location of the phase centres of the radiated components, and its inefficient use of substrate space, limiting the number of possible configurations wherein grating lobes are suppressed. Therefore a compact polarisation-agile antenna element was developed to overcome these limitations [2]. Here we report results of measurements performed on two types of three-element array using these compact polarisation-agile elements.

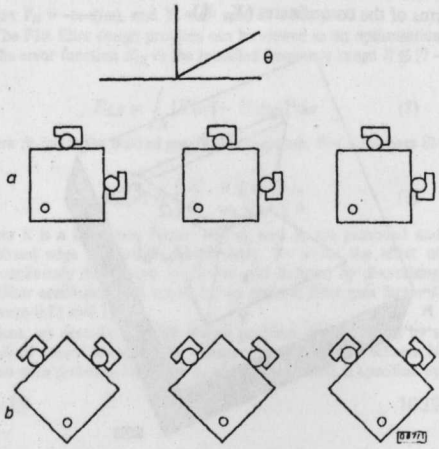

Fig. 1 *Array geometry*
Constructional details of elements as in [2]