# Analysis of diffraction from doubly periodic arrays of perfectly conducting bodies by using a patch-current model

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A novel solution is presented for the problem of three-dimensional electromagnetic scattering of a plane wave from a doubly periodic infinite array of perfectly conducting bodies. A set of fictitious spatially periodic and properly modulated patches of magnetic current is used to simulate the scattered field. These patch currents are of dual polarization and have complex amplitudes. The electromagnetic field radiated by each of the periodic patch currents is expressed as a double series of Floquet modes. The complex amplitudes of the fictitious patch currents are adjusted to render the tangential electric field zero at a selected set of points on the surface of any of the scatterers. The procedure is simple to implement and is applicable to arrays composed of smooth but otherwise arbitrary perfectly conducting scatterers. Results are given and compared with an analytic approximation.